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PHARMACEUTICAL FORMULAS

A BOOK OF USEFUL RECIPES FOR THE DRUG TRADE

COMPRISING FORMULAS FOR

TOILET PREPARATIONS AND SPECIALITIES
PREPARATIONS FOR THE HAIR; DENTIFRICES; PERFUMES
HOUSEHOLD AND CULINARY REQUISITES
BEVERAGES; ANTISEPTICS AND DISINFECTANTS
INKS; VARNISHES; CONFECTIONERY
MEDICINAL COMPOUNDS

AND MANY OTHER PREPARATIONS RELATED TO THE ART OF PHARMACY

COLLATED CHIEFLY FROM

'THE CHEMIST AND DRUGGIST'
AND
'THE CHEMISTS' AND DRUGGISTS' DIARIES'

WITH ANNOTATIONS

BY

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EDITORIAL NOTE

THIS is a book which has been asked for many times during the past twenty years. Chemists who have found a formula from *The Chemist and Druggist* pay their subscription over and over again have frequently suggested to the Editor that the whole of such formulas should be gathered together and published as a book. When these suggestions were accepted, and the work of collating commenced, it was seen that the task was formidable, because of the enormous number and varied quality of the formulas to be dealt with. A goodly proportion of the formulas had to be proved, and the results of the provings are partly embodied in the book. In some cases they show stock and traditional formulas to be useless. It is hoped that the annotations will be helpful to intelligent compounders, and that the hints in regard to packing, labels, and the like will assist retailers.

One feature of the book is that the contents are in a great measure based upon requests from more than a generation of pharmacists for assistance in supplying articles for which they could discover no recognised formulas. Thus is it that the correspondence columns of such a journal as *The Chemist and Druggist* are a fair index to the everyday wants of the trade, and the best of the replies in fifty volumes have been concentrated into the book. The information so collated has been as far as possible checked by experiment and reference to the original sources, and supplemented by private formulas which have been abundantly proved in practice. The book is not a treatise on practical pharmacy: it is assumed that those who use it are acquainted with pharmaceutical manipulation, and understand the art and mystery underlying such expressions as 'M.S.A.'

The customary signs employed in prescriptions are, with few exceptions, used in the formulas, but it is well to note as opinions differ in the matter, that their equivalence is a follows :—

℈ = a scruple of 20 grains.
ʒ = a drachm of 60 grains, or 60 minims.
℥ = an ounce of $437\frac{1}{2}$ grains, or 480 minims.
lb. = a pound of 16 ounces.
O = a pint of 20 ounces.
Cong. = a gallon of 8 pints.

The British rule, 'Solids by weight, liquids by measure applies throughout, unless where otherwise stated. Care h been taken to modify continental formulas according to th rule. This is important in dealing with liquids, and is t frequently neglected, with the result that British compounde fail to produce preparations like the originals. For examp a mixture of 1 part of syrupy phosphoric acid and 10 parts rectified spirit in a German formula should be put as 0·66 p and 12 parts respectively in an English one, because t specific gravity of the acid is 1·500 and of the spirit 0·8 The strength of the mixture is 1 in 11 by weight or 1 in by measure. In the case of formulas which have origina in the United States, and which contain the 'pint,' it has be remembered that 16 oz. (not 20 oz.) is implied. Fail to recognise these and similar differences in practice largely responsible for the propagation of a host of unworka formulas.

In some instances the selection of formulas for specific articles may seem unnecessarily liberal. It stands to reason that a retailer does not require, *e.g.*, more than one or, at the most, two formulas for lavender-water; but here he will find a dozen or two. It may be thought that we have printed everything we could lay our hands upon, but that is not the case. We have *selected*, endeavouring never to duplicate, but to show all the types. Also the fact could not be overlooked that tastes differ: what may please the West-end beauty would not suit the East-end flower-girl. We may occasionally express a preference, personal experience prompting, but we shall hope to be corrected where our opinions are not found to coincide with the general taste. Indeed, we shall cordially welcome all practical criticism which may reach us from competent sources, and shall endeavour to profit by it.

One word in regard to formula failures. Many a man says a formula is bad when his ingredients are at fault. Weak lime-water does not emulsify like freshly-prepared aqua calcis; hard paraffin has not all the properties of beeswax; nor does a geranium-loaded otto of rose give the delightful aroma of the real thing. Such deviations may not always be the cause of failure, but they often have something to do with it; and manipulation has more. We have heard experienced pharmacists say that Lister's formula for boric ointment is unworkable, and have seen apprentices turn it out beautifully.

42 Cannon Street, London, E.C.:
April, 1898.

NOTES

It is not claimed that formulas for secret preparations which occur in this book are the original formulas in the possession of the proprietors of such preparations, and we caution compounders and retailers in regard to the use of titles in which a proprietary right may have been established by advertisement or by registration.

Addenda contrasting formulas and references in this book with preparations and titles of the British Pharmacopœia, 1898, are printed on page 636.

The stringency of the Medicine-stamp Acts in Great Britain requires the attention of retailers in connection with any of the labels for medicines given herein. If recommended for the prevention, cure, or relief of any human malady, preparations for internal or external use must be stamped.

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PHARMACEUTICAL FORMULAS

TOILET PREPARATIONS AND SPECIALITIES

Those extremely miscellaneous preparations called 'Toilet Requisites' are, in many respects, as important as any class of goods retailed by chemists and druggists, for they appeal to the tastes of the refined and the rich—to the beautiful and those who wish to be—and they afford the retailer splendid opportunity for exhibition of skill in compounding and taste in packing.

In certain respects the trade in toilet preparations is unsatisfactory—this mainly from the ethical side, and because the public expect too much from the class of specialities called 'beautifiers.' It frequently happens that the higher priced an article is, and the more highly it is vaunted, the greater is its success. This applies particularly to the class of articles we are now dealing with, and is a source of danger to the compounder's self-respect. It is right that some explanation such as this should be made, for it is as disappointing to the compounder as to the user of a toilet speciality to attribute virtues to it approaching the miraculous.

Unquestionably, cosmetics and emollients are beneficial to the skin when associated with sound hygienic conditions. It would, for example, be ridiculous for a woman to expect to have a smooth skin and bright complexion if she did not take the morning bath and open-air exercise, eat regularly and moderately, and clothe always with due regard to comfort. Cosmetics are a good adjunct to these, but they should be used together. Those who wish to acquaint themselves with the pros and cons of this side of the subject should read Dr. Shoemaker's 'Heredity, Health, and Beauty,' which deals admirably with the customer's duties to himself or herself, and may therefore aid the retailer in giving verbal hints, composing pamphlets, or constructing labels.

We have endeavoured to divide the formulas in this chapter into groups of compounds more or less akin, and again desire to emphasise the importance of good style in putting up all preparations. Of no class is this so important as of toilet specialities.

SKIN CREAMS AND LOTIONS

Complexion Beautifier

Acid. nitric. dil.	ʒij.
Spt. rect.	℥iij.
Ess. rosæ alb.	℥ss.
Ol. neroli	♏x.

M. et adde

Sol. hydrogen. perox.	℥ij.
Glycerini	℥iij.
Tr. cocci	ʒj.
Aq. ad	℥xl.

M.

Allow to stand a few days and filter.

Directions for use.—Wet a corner of a serviette with the lotion and apply to the face, neck, arms, and hands each time after washing; then dry.

Sulphur Skin Lotion

Zinci sulphocarbol.	℈j.
Zinci oxidi	ʒij.
Sulphur. præcip.	ʒj.
Aq. coloniensis	ʒvj.
Glycerini	ʒvj.
Aq. ad	℥vj.

Dissolve the sulphocarbolate in the water. Mix the oxide of zinc and precipitated sulphur with the glycerine in a mortar, and to this add the eau de Cologne; transfer to a bottle, and wash out the mortar with the water.

The lotion may be coloured with a single grain of carmine triturated along with the oxide of zinc.

Eau de Beauté

(Used by Creole ladies)

Hydrarg. perchlor.	gr. xij.
Camphor.	gr. xv.
Zinci sulph.	ʒj.
Plumbi acet.	ʒj.
Spt. rect.	℥ss.
Ovi vitell. unius.	
Aq. rosæ ad	℥viij.

Dissolve the sublimate and camphor in the spirit by trituration. Mix the yolk of egg with 6 oz. of rose-water. Dissolve each of the salts in ½ oz. of rose-water, add first the spirit solution, then the zinc solution, and finally the lead solution, shaking gently, and make up to 8 oz.

Eau de Fleurs

Ol. lavand.	℥ss.
Ol. bergamot.	℥ss.
Ol. neroli	ʒij.
Ol. aurant.	ʒij.
Ol. caryoph.	ʒj.
Mosch.	gr. iv.
Spt. rect.	Oiv.
Aq.	Oiv.

After a week filter through magnesia.

A cooling application for the

skin, and at the same time a pleasant perfume.

Eau de Pagliari

Aluminis	ʒj.
Acid. benzoic. . . .	gr. x.
Tr. benzoin. simp. . .	℥j.
Aq.	℥x.

Dissolve the alum in the water, then the acid, add the tincture, shake well, and filter.

May Dew Lotion

Aq. destil. . . .	℥v.
Pulv. boracis . . .	ʒj.
Glycerini	℥ss.
Sodii sulphitis . . .	ʒij.
Aq. rosæ trip. ad . .	℥x.

M.

Put up in 10-oz. white round bottles and label with the annexed (printed, say, in blue, red, and silver) :—

THE ENGLISH

MAY-DEW LOTION

HAS NO EQUAL FOR GENERAL USE AS

A Toilet Table Companion.

It cools and softens the skin when hot, dry, and painful from exposure to sun or wind, or heated by exercise. It is of great use in eruptions, chafing, and roughness.

Apply freely with a small sponge.

(*Name and Address.*)

Turkish Complexion Wash

Liq. ammoniæ. . .	ʒij.
Spt. myrciæ . . .	℥ij.
Aq. rosæ . . .	℥ij.
Pulv. boracis . . .	℥j.
Glycerini. . . .	℥j.
Aq. destil. . . .	℥xx.

M.S.A.

Put up in 8-oz. white rounds; cap with skin, and label as here shown :—

This preparation is exactly similar to that used by the ladies of the Sultan's seraglio.

TURKISH

COMPLEXION WASH

Whitens and beautifies the skin; removes tan, freckles, pimples, and blackheads; and keeps the complexion clear and brilliant under all circumstances.

Apply with a soft woollen cloth.

(*Name and Address.*)

Startin's Skin Lotion

Zinci oxidi	ʒij.
Calaminæ	ʒij.
Sulph. præcip. . . .	ʒj.
Glycerini	ʒiij.
Aq. rosæ ad . . .	℥ij.

M.

If desired 1 gr. of perchloride of mercury may be added.

Magnolia Balm

The following is a simple and safe imitation of the celebrated preparation :—

Zinc oxide	℥iij.
Otto of rose . . .	♏v.
Distilled water . . .	℥xvj.

Triturate the otto with the oxide and gradually add the water. The preparation is better if the otto is mixed with S.V.R. ʒss., the solution poured off from the stearoptene, and then mixed with the zinc. The lotion may be coloured with carmine:

The Original appears to be so, and more resembles the following:—

Zinc oxide	ʒij.
Carmine	gr. j.
Oil of bergamot	♏v.
Oil of lemon	♏v.
Otto of rose	♏ij.
Glycerine	℥ij.
Water to	℥viij.

Mix.

Complexion Beautifiers

I. (Similar to Madame Ruppert's.)

Corrosive sublimate	gr. viij.
Tincture of benzoin	ʒj.
Water to	℥viij.

Mix. Apply night and morning.

II. (Similar to Kalydor.)

Blanched bitter almonds	℥j.
Rose-water	℥v.

Make a milky emulsion, strain, and add

Mercuric chloride	gr. ss.
Ammonium chloride	gr. ij.
Eau de Cologne	ʒij.
Cherry-laurel water	℥ss.

Mix.

Glycerine Balm

Zinci oxidi (Hubbuck's)	℥iiss.
Glycerini	℥iv.

Rub throughly until the mixture is perfectly smooth, then add the following solution:—

Otto rosæ	♏xx.
Ol. neroli	♏xv.
Ol. amygdal. essent.	♏v.
Ol. bergamot.	♏x.
Spt. rect.	℥ss.

Finally add

Aq. rosæ tripl.	℥ij.
Aq. ad	℥xxx.

M.

Label appropriately, and with a small 'Shake the bottle.' When this lotion is applied to the face and hands occasionally—*i.e.*, always after washing or after exposure—it keeps the skin smooth and soft.

Pimple Lotion

Crystallised alum	℥j.
Salt	℥j.
Sublimed sulphur	℥j.
Sugar candy	ʒij.
Spermaceti	ʒij.
Elder-flower water	℥iij.
Distilled water	℥iij.
Brandy	℥x.

Reduce all the solids to fine powder and rub up with the mixed liquids.

'The lotion to be applied at intervals during the day upon linen rags, which should frequently be changed.'

Curious as this lotion appears to be, it is an effectual and quick remedy for eruptions on the face.

Eau des Carmes

A preparation similar to this French speciality is thus made:—

Melissa officinalis (balm)	℥xiv.
Lemon-peel	℥iiss.
Cinnamon	℥j.
Cloves	℥j.
Nutmegs	℥j.
Coriander	℥ss.
Angelica-root	℥ss.
Proof spirit	Ov.

Macerate for four days and distil ½ gal.

The Golden Eau des Carmes is tinted with a minim of tincture of saffron to each ounce.

Emollient Summer Lotion

Glycerini	℥j.
Aq. mellis	℥j.
Aq. lavand.	ʒiij.
Aq. flor. aurant.	℥j.
Aq. flor. sambuci	℥iv.
Otto rosæ	gtt. ij.
Spt. rect.	℥ss.

Dissolve the otto in the spirit, and mix with the rest of the ingredients in the order given. Filter.

EMOLLIENT SUMMER LOTION

SOFTENS THE SKIN,

IMPROVES AND PRESERVES

THE COMPLEXION,

Rendering it Clear and Beautiful.

Removes tan, sunburn, freckles, and any roughness, irritation, or redness caused by exposure.

Apply to the skin by means of a soft linen cloth, especially after washing.

This lotion is a very superior article, and retails at *6d.* per oz. Put it up in nice bottles, preferably of amber glass.

Skin Lotions have generally the property of removing eruptions or redness caused by hygienic errors. They are not in the true sense preservatives. For the latter purpose emollients are essential; hence by far the greater proportion of complexion fluids are creamy substances, containing glycerine or an oleaceous body. The oldest of these is probably milk of roses, but that of late years has been surpassed in popularity by glycerine and cucumber. With suitable modification of the perfume some of the recipes which follow will afford preparations able to carry any fancy name which the retailer chooses.

Milk of Roses

I

Blanched almonds	ʒij.
Curd soap	℥ss.
Spermaceti	ʒij.
Almond oil	℥ss.
Rectified spirit	℥ss.
Tincture of benzoin	ʒij.
Otto of rose	♏v.
Oil of rose-geranium	♏v.
Glycerine	℥iiss.
Rose-water	℥xx.

Melt the spermaceti and oil together, add the curd soap, and continue the heat until uniform; then transfer to a warm mortar and add gradually about an ounce of the rose-water boiling. Beat up the almonds well in another mortar and add the spermaceti mixture to this paste. Mix thoroughly and stir in the remainder of the hot rose-water to form an emulsion. To this add the oils dissolved in spirit and tincture, strain through fine calico, and make up to 20 oz. with rose-water passed through the material on the strainer.

An alternative process is to pound the soap and almonds in a warm mortar, add the spermaceti and almond oil heated together, rub thoroughly, emulsify with the hot rose-water, and finish as above.

II

Curd soap	℥ss.
Cold-cream	℥j.
Distilled water	℥xxxij.
Otto of rose	ʒss.
Rectified spirit	℥j.

Shave the soap into shreds and dissolve in 2 oz. of the water by the heat of a water-bath. Incorporate it with the cold-cream in a warm mortar, and gradually add the rest of the water (tepid) to form an emulsion. Transfer to a bottle and add the otto dissolved in the spirit. Shake well. Benzoic acid ʒss. dissolved in the spirit improves it.

III

Blanched bitter almonds	ʒiij.
Tincture of benzoin	℥ss.
Soft soap	ʒj.
Rose-water	℥viij.

Beat up the almonds with the soft soap, emulsify with the rose-water, strain, and add the tincture.

IV

Tincture of benzoin	℥ss.
Tincture of storax	ʒii.
Spirit of rose	ʒij.
Rectified spirit	℥iiss.

Mix and add to

Rose-water	℥xviss.

Give one shake.

V

Liq. plumbi subacet.	ʒij.
Glycerini	℥ss.
Spt. rect.	℥ij.
Spt. rosæ	℥ss.
Aq. lavand.	ʒij.
Aq. destil. ad	℥xvj.

Mix all together, adding the liq. plumbi last.

Lait Virginal

Tincture of benzoin	ʒij.
Rose-water to	℥viij.

Mix.

A proof spirit tincture gives the best result, but the milk is greatly improved by the addition of glycerine ʒiij. to the water. Orange-flower water or other aromatic water may also be used.

The first formula for milk of roses is the best. It is typical of the old-fashioned article. There are several modifications of this form, but none gives so good a result as No. I., or a lotion so nice in all respects. It is a good, soothing application, and keeps well. No. II. is a simple and quickly made milk, which does not separate. It is apt to become stringy. Nos. III. and IV. are French formulas, and No. V. a German. These are excellent lotions, IV. and V. especially being of a highly cooling nature owing to the spirit which they contain.

Cucumber Cream.—Under this and similar names a preparation has become very popular of recent years, which is an imitation of an article made by Mr. Beetham, of Cheltenham.

How the latter preparation is made we do not pretend to say. Mr. Beetham's speciality has characteristics of its own. The first formula for a similar preparation was published in *The Chemist and Druggist* in 1886, as a suggestion, and all which have since seen the light of day are more or less modifications of it. No. I. formula subjoined is the 1886 one.

I

White glycerine soap .	℥ss.
Cucumber ointment .	℥j.
Ess. Jockey Club . .	℥ss.
Rectified spirit . .	℥j.
Tepid distilled water .	℥xxxij.

Prepare as stated below.

II. (Modified)

Curd soap . . .	℥ss.
Cucumber ointment . .	℥j.
Spirit of cucumber . .	℥ij.
Oil of rose-geranium .	ʒss.
Distilled water. . .	℥xxx.

Dissolve the soap in 2 oz. of water by boiling. Put the ointment in a very warm mortar and mix the soap solution thoroughly with it; then add the rest of the hot water slowly, stirring well all the time to produce a uniform cream; dissolve the oil in the spirit and add to the emulsion contained in a bottle, shaking well. Another good plan which seldom fails is: Melt the pomade on a water-bath, and dissolve the soap in hot water separately. Put together and shake until nearly cold, then add the rest of the ingredients.

III

Curd soap	℥ss.
Distilled water . . .	℥iss.
Cucumber pomade . .	℥iij.
Glycerine	℥j.
Perfume . . .	a sufficiency
Water to	Oij.

Dissolve the soap in the water and mix well with the pomade previously melted in a large and hot mortar. Allow to stand twelve hours, then add the glycerine and perfume (ol. rosæ geran. ♏xx., ol. limonis ♏xx.), and gradually work in the rest of the water. Make up to 2 pints and strain.

IV

Warrick's jasmine pomade.	℥iiss.
Powdered white Castile soap	ʒv.
Powdered borax . .	℈ij.
Otto of rose . . .	♏xx.
Oil of lemongrass . .	♏v.
Rectified spirit . . .	℥iv.
Glycerine	℥viij.
Water	℥xxv

Mix the first three ingredients in a mortar, dissolve the essential oils in the spirit, and add to the glycerine and water previously mixed. Now emulsify the fatty mixture with this solution by adding it gradually and with constant stirring.

V

Powdered Castile soap (white)	℥ss.
Powdered borax . .	ʒij.
Cucumber pomade . .	℥ij.
Cherry-laurel water . .	℥iij.
Rectified spirit . . .	℥iij.
Water	Oij.

Triturate the ointment with the soap and borax into a uniform paste, then add the water little by little, finally the cherry-laurel water and spirit. Millefleurs, violet, or Ess. Bouquet may be used as perfume.

The last two recipes have the advantage of speed in preparation. The products are excellent. By omitting the cherry laurel water, and replacing it with tincture of orris, we get an excellent Lait d'Iris. It is also a good basis for a Superb Complexion Lotion. For this purpose add hydrarg. perchlor. gr. j. (dissolved in the spirit) to each ounce of the lotion, and tint it pink with liquor cccci. A smart man can put up any of the preparations in taking styles, colouring and perfuming to suit the name or names adopted. The first of the following is the style 'made in Germany':—

Lait de Concombre

Pulv. gum. acaciæ	℈v.
Ol. sesami	ʒvj.
Aquæ	ʒiv.

Mix the oil and the gum intimately in a mortar, then add the water, and stir diligently until the whole is perfectly incorporated. Next add

Aq. rosæ	℥viij.

Transfer to a bottle, shake, and add the following:—

Aq. coloniensis	ʒj.
Spt. æther. nitrosi	ʒj.
Spt. camphoræ	ʒj.
Tr. benzoin. simp.	ʒss.

Mix well.

Cucumber Ointment

Lard	℥x.
Suet (veal)	℥vj.

Melt together and add

Tolu balsam	gr. ix.

Dissolved in

Spirit	q.s.

Then add cucumber juice ℥xij. in two portions of ℥iv. and ℥viij., stirring occasionally for four hours after the first addition and for another hour after the second. Finally pour off the juice, melt the fat on a water-bath, and pot. When cold cover with a layer of rose-water.

NOTE.—Some cucumber pomade is made with lanoline, and is useless for making the cream.

Cucumber Paste may be made according to the third recipe—*i.e.*, the product as it stands at the end of twelve hours—adding to each ounce of it 20 minims of simple tincture of benzoin.

Glycerine Cream

I

Almond oil	℥viij.
Spermaceti	℥iij.
White wax	℥j.
Borax	℥ss.
Glycerine	℥iij.
Orange-flower water	℥j.
Oil of neroli	♏v.
Otto of rose	♏v.

Melt the first three ingredients together, and transfer to a hot mortar. Dissolve the borax in the glycerine and orange-flower water, and add a little at a time to the mortar contents, stirring well to produce a nice, uniform cream. Finally add the perfume.

II

Pulv. tragacanth.	ʒij.
Ol. rosæ geran.	♏xv.
Spt. rectificat.	℥ss.
Glycerini	℥iij.
Aquæ	℥vj.

Dissolve the oil of rose-geranium in the rectified spirit and add to the tragacanth contained in a mortar; mix well, then add all at once the glycerine and water, previously mixed, and stir until uniform.

No. I. cream is a healing agent for hands and face when frost-bitten, chapped, or sunburnt. It should be put up in opaline jars or wide-mouthed bottles with celluloid caps. It resembles cold-cream, and is used in a similar manner No. II. has been sold as 'Cream of Roses' and under other names, according as it is perfumed. It is put up, like No. I., for summer and winter use.

Honey-and-Almond Cream

Cold-cream	℥ss.
Almond oil	℥ss.
Glycerine	℥ss.
Boric acid	ʒj.
Solution of soda	℥iss.
Quince mucilage (ʒj. seeds)	℥v.
Water to	Ov.

Stir the cold-cream, almond oil, and solution of soda together until a uniform soapy emulsion is obtained. Dissolve the boric acid in 60 oz. of warm water; to this add the glycerine and quince mucilage, and add the mixture slowly, and with constant stirring, to the mortar contents. Perfume with spirits of almonds and rose when cold, and make up.

Lanoline Toilet Cream

Rieger's almond soap	ʒj.
Distilled water	℥j.

Dissolve by heat, and mix with

Lanoline	ʒj.
Glycerine	℥j.

Use a warm mortar for the mixing, and perfume with rose and neroli.

Creme de Toilette

For the removal of sunburn, freckles, comedones, and similar affections:—

Lanoline	ʒv.
Almond oil	ʒv.
Precipitated sulphur	ʒv.
Oxide of zinc	ʒiiss.
Violet extrait	ʒss.
Tincture of alkanet	a sufficiency

Make an ointment, using sufficient of the tincture of alkanet to impart a flesh colour.

Lanoline cream is an excellent application for chapped hands, lips, or face. It should be applied to the parts affected, and in ten minutes washed off with tepid water and soap. 'The lanoline remains as a fine, adherent layer, replacing the natural fat, and restoring the pliability of the skin.'

Malvina Cream

White vaseline	℥vj.
White wax	℥j.
Spermaceti	ʒv.
Subchloride of bismuth	ʒvj.
Perchloride of mercury	gr. v.
Otto of rose	♏vj.
Oil of bitter almonds	♏j.
Rectified spirit	℥ss.

Melt the first three ingredients together, and while cooling incorporate the subchloride with the basis in a warm mortar. Make a solution of the last four ingredients and add to the mortar contents, stirring until uniform and cold. In cold weather use only half the quantities of wax and spermaceti.

Lanoline Milk

Pulv. sapon. castil. alb.	ʒij.
Pulv. boracis	ʒj.
Lanolin.	ʒvij.
Ol. cocos	ʒiij.
Aquæ	ʒvij.

Rub together for a quarter of an hour, then add gradually, and with constant stirring

Aq. rosæ (40° C.)	℥x.

Shake well and perfume.

Malvina cream is an American preparation 'warranted to remove freckles, beautify the complexion, and preserve the smoothness of the skin.' It is used with Almond Lotion I.

Lanoline milk may also be made with double the quantities of solids and any other floral water.

Almond Lotions

I

Perchloride of mercury	gr. ij.
Oxide of zinc	ʒiij.
Heliotrope perfume	ʒij.
Almond emulsion to	℥xvj.

Mix.

II

Blanched almonds	℥iv.
Curd soap	℥ss.
Oil of bitter almonds	♏x.
Oil of bergamot	ʒj.
Rectified spirit	℥iv.
Orange-flower water	℥xij.

Dissolve the soap in the water by warming, and add gradually to the almonds beaten up in a mortar. Strain, and add the oils dissolved in the spirit. Mix well.

Almond Cosmetic Cream

Almonds, blanched	℥j.
Rose-water	℥iv.

Beat the almonds to a paste and add the rose-water; strain, heat to boiling point, and add

White wax	ʒj.
Almond oil	℥ij.
White Castile soap	℥j.

Mix thoroughly and add

Saturated boric-acid solution	℥ij.
Eau de Cologne	℥j.
Oil of bitter almonds	♏iv.
Oil of rose-geranium	♏v.
Glycerine	℥j.

Mix.

Non-sticky Cosmetic Cream

Corn flour	ʒiij.
Boric acid	ʒij.
Carbolic acid	ʒss.
Glycerine	℥vj.
Distilled water	℥xiv.

Perfume to suit.

Boil the corn flour with the water until a perfect paste is formed. Dissolve the boric and carbolic acids in the glycerine and add to the first mixture. Lastly add perfume.

Toilet Cream

Tragacanth, finest flake	ʒx.
Distilled water	Ovj.
Glycerine	℥xvj.
Salicylic acid	ʒij.

Mix the acid with the glycerine and gradually add the water. In this mixture allow the tragacanth to soak for several days until it is thoroughly diffused throughout the liquor. Strain through coarse calico with pressure, and add a sufficiency of any handkerchief perfume.

Toilet Paste

Adipis benzoat	℥j.
Ceræ flavæ	ʒj.
Ceræ alb.	ʒij.
Calaminæ alb.	℥j.
Carmin.	gr. ss.
Otto rosæ	♏ij.
Ol. limettæ	♏ij.
Ess. moschi	♏v.

Melt the first three ingredients and mix in a warm mortar with the calamine and carmine, previously triturated. Add the perfumes.

The tragacanth cream is a nice preparation for the skin, being soothing and healing. It keeps well. The formula for glycerine cream on page 9 is an improvement upon it, and the preparation is easier and more quickly made. 'Heder' says of the toilet paste that a preparation resembling it was made by a Frenchwoman, who charged 30*s.* for a 1½-oz. upright covered pot of it. This was in 1890. The paste is used (warm) by ladies of fashion as a beautifier of the skin.

Winter Cream

Camphorated oil	℥ss.
Borax	ʒij.
Glycerine	℥vj.
Solution of potash	gtt. vj.
Oil of bergamot	gtt. v.
Oil of neroli	gtt. ij.
Water	℥iv.

Dissolve the borax in ℥j. of water and add the potash; with this solution emulsify the mixed oils. Dilute the glycerine with the rest of the water and add gradually.

Honey Paste

Ol. amygd. dulc.	℥ij.
Cetacei	℥ij.
Mellis	℥j.
Otto rosæ	gtt. xv.
Ol. lavand.	gtt. vij.

M.

Emollient Ointment

Vaselini	℥viij.
Ceræ flavæ	℥ij.
Benzoini	℥j.
Gum. thus	℥ij.
Tereb. venet.	℥ij.

Melt together over a water-bath and strain through lint. Then add when sufficiently cool

Camphor.	℥j.
Ol. eucalypti	℥ss.

This preparation is a valuable one for those chaps and cracks of the skin which so persistently resist the healing influence of glycerine and similar emollients. It is also very good for chilblains. Sold in 1-oz. boxes at 6*d.* Should be warmed at the fire before use.

Glycerine Jellies

I

Thin French gelatine	ʒiv.
Water	℥v.
Glycerine of borax	℥x.
Triple rose-water	℥vj.

Soak the gelatine in the water all night in a gallipot, and next morning place the pot in a saucepan with water, and heat until dissolved. Then add the glycerine and the rose-water, previously mixed with a teaspoonful of white of egg. Heat until the albumen coagulates, and filter while hot through a twill bag.

II

Gelatine	℥j.
Water	℥xxiv.
Glycerine	℥xij.
Otto of rose	♏x.
Thymol	gr. ij.
Rectified spirit	ʒj.

Prepare as No. 1.

The jelly may be coloured red with cochineal, the colouring being added to the water; or golden with a little saffron, a grain of which may be infused in the last water, which in this case may be triple orange-flower instead of rose. Elder-flower odour is obtained by using essential oil of elder; in this case colour the jelly a faint green with tincture of chlorophyll. The very finest gelatine should be used in order to get a transparent preparation. This is now obtainable in very thin sheets, and of various colours, so that no additional colouring is required.

Carbolated

Isinglass	℥j.
Glycerine	℥xvj.
Water	℥viij.
Carbolic acid	ʒj.

Soak the isinglass in as much water as will cover it, and when soft pass through a No. 40 sieve. Melt the siftings in the glycerine and water by heat, add the carbolic acid, and perfume.

Solid Glycerine

French gelatine	ʒij.
Glycerine	℥iss.
Water	℥ss.
Otto of rose	♏j.

Mix the glycerine, water, and gelatine, macerate for an hour; then dissolve by the heat of a water-bath; pour into moulds of paraffin or wax paper.

Solid glycerine makes a nice elastic pencil. It should be retailed in the original moulds with some stiff fancy covering or in boxes with movable bottom. To be used after washing and before drying the hands.

Arnica Jelly

Starch	ʒiv. ℈ij.
Glycerine	℥iv.
Water	℥j.

Mix and heat until dissolved; while still warm add

Tincture of arnica	℥ss.

so that a uniform jelly may be formed. Put up in wide-mouthed bottles. The tincture may be coloured with cochineal or saffron (1 in 20) macerated for a day or two previous to using.

Lip Salves

I

White wax	℥iss.
Almond oil	℥iij.
Carmine	gr. vj.
Otto of rose	♏vj.

Melt the oil and wax together. Dissolve the carmine in just enough solution of ammonia, put in a warm mortar, and add the basis; stir constantly until it sets, adding the otto towards the end of the process.

May be cast into sticks before setting. This is the French form.

II

Benzoated olive oil	℥xvj.
White wax	℥viij.
Spermaceti	ʒj.
Alkannin	gr. xv.
Oil of jasmine	ʒiss.
Otto of rose	♏v.

Melt the wax and spermaceti in the olive oil by heat; dissolve the alkannin in about ½ oz. of this mixture in a test-tube and add to the rest. Stir constantly, adding the perfumes last.

III

Almond oil	℥v.
White wax	℥iij.
Spermaceti	℥ss.
Alkanet-root	ʒiij.

Digest for a few hours on a water-bath, then strain and add

Oil of bergamot	ʒss.
Oil of lemon	ʒss.
Jasmine pomade	ʒij.
Salicylic acid	℈ij.

Stir until it sets.

IV

Ol. amygd. dulc.	℥viij.
Ceræ albæ	℥ij.
Cetacei	ʒj.
Rad. anchusæ	ʒvj.
Ol. macidis express. (must be fresh)	ʒiv.
Otto rosæ	ʒss.

Melt the first three ingredients and the oil of mace and add the alkanet-root. Continue the heat until the alkanet-root is thoroughly exhausted—that is, when a good dark colour is obtained; then strain and, when nearly cold, add the otto.

This is a splendid preparation, as it does not become rancid or lose its colour. It is the formula of a famous London West-end house.

Coral Stick

Hard paraffin	ʒvj.
Cocoa butter	ʒvj.
White vaseline	℥ij.
Eosin	gr. j.
Otto of rose	gtt. v.

Melt the first three together by heat. Dissolve the eosin in ½ dr. of spirit and add it and the otto to the mixture. Then cast the salve into sticks.

White Stick

White vaseline	℥iv.
Hard paraffin	℥iss.
Benzoic acid	ʒss.
Coumarin	gr. j.
Vanillin	gr. ij.
Heliotropin	gr. ss.
Otto of rose	♏v.

Prepare in a similar manner to the coral stick.

Glycerine Lip Salve

Glycerine cream (p. 8)	℥iv.
Boric acid	℥ss.

Solution of carmine, a sufficiency to colour.

Mix well.

Vaseline Lip Salve

Vaseline	℥iv.
White wax	℥ij.
Carmine	gr. viij.
Otto of rose	♏x.

Proceed as in No. 1.

Another very good Colour for Lip Salve is safranine, an azo-colour, occurring in reddish crystals, easily soluble in water and alcohol and affording a brilliant red solution. The colour is pretty and permanent. For colouring salves and pomades use safranine ʒj., S.V.R. ℥iij., water to ℥xij.

Camphor Ball and Ice

Ball

I

White wax	℥ij.
Almond oil	℥x.
Spermaceti	℥viij.

Melt together and add

Flowers of camphor	℥vj.

Keep in a covered vessel and stir occasionally until about to set, then pour into boxes.

II

Spermaceti	℥iv.
White wax	℥xij.
Oil of almonds	ʒv.
Flowers of camphor	℥iv.

Prepare like No. 1. This is Martindale's formula.

III

Lard	℥viij.
Almond oil	℥viij.
White wax	℥viij.
Spermaceti	ʒvj.
Flowers of camphor	ʒvj.

Prepare like No. 1.

IV

White vaseline	℥iij.
Paraffin wax	℥iij.
Lard	ʒj.
Flowers of camphor	ʒj.

Prepare like No. 1.

V

Ceræ albæ	℥iv.
Cetacei	℥iij.
Ol. ricini	ʒvj.
Pulv. camphoræ	ʒj.
Glycerini	℥iv.
Ol. pimentæ	ʒj.

Melt the wax and spermaceti on a water-bath, add the castor oil, then the camphor. Pour into a warm (but not hot) mortar, beat in the glycerine until smooth, and add the essential oil.

The first three are the best quality, and the fourth is suitable for penny and twopenny boxes.

Ice

I

White vaseline	℥viij.
Hard paraffin	℥v.
Camphor flowers	℥ij.

Prepare in the same way as camphor ball, stirring frequently, but cast into oblong flat pieces, which should be wrapped in paraffined paper.

II

Spermaceti	℥iv.
White wax	℥viij.
Almond oil	℥xvj.

Melt and add

Flowers of camphor	℥iv.

Dissolve and add

Oil of bitter almonds	ʒss.
Expressed oil of mace	ʒij.

Stir well, and when about to set pour into suitable moulds standing in a dish of cold water so as to cool quickly.

III

Camphor	℥iij.
Benzoated lard	℥xv.
White wax	℥x.
Spermaceti	℥iv.
Rectified spirit	a sufficiency

Triturate the camphor with enough spirit to dissolve it. Melt the wax and spermaceti on a water-bath and add the camphor solution. Continue to stir until the spirit has evaporated, then remove from the water-bath, add the lard, stir, and pour into moulds.

Of these ices we prefer the first, which is an excellent, cheap, and quickly made article that looks well and sells at sight. Nos. II. and III. are American, the latter from the U.F. It is a good example of 'how not to do it,' the spirit being pure waste, except to powder the camphor. Another formula we caution retailers to give a wide berth. It orders mutton suet 16 parts, spermaceti and wax of each 1 part, and camphor 2 parts. The objection to this is the sheepy odour, which is extremely persistent.

For other preservatives and preparations for the hands see the section on 'Manicure.'

Violet Powder

I

Powdered starch	lb. vj.
Powdered orris	lb. j.
Oil of bergamot	ʒij.
Oil of neroli	♏x.

Mix and sift three times.

II

Starch powder	lb. ij.
Orris powder	lb. j.
Oil of bergamot	ʒj.
Oil of lemon	ʒj.
Oil of cloves	♏xv.
Oil of neroli	♏xv.

Mix.

III

Starch, in fine powder	℥xvj.
Powdered orris-root	℥vj.
Otto of rose	♏iij.
Oil of origanum	♏iij.

Mix.

IV

Powdered orris-root	℥iv.
Starch, in fine powder	lb. iv.
Otto of rose	♏xij.
Essence of musk	ʒss.
Oil of bergamot	♏vj.

Mix.

The powder ingredients in the subjoined nursery powders may also be used with any of the following Perfumes:—

I

Powdered orris-root	℥xvj.
Grain musk	℈j.
Oil of bergamot	℥iv.
Oil of lemon	℥ij.
Jasmine extrait	℥ij.
Oil of cloves	℥ss.
Oil of neroli	ʒj.

Mix well.

II

Oil of bergamot	ʒvij.
Oil of neroli	♏xx.
Oil of cloves	♏xx.
Otto of rose	♏xx.
Essence of musk	♏xl.

Mix.

III

Oil of bergamot	℥v.
Oil of lemon	℥v.
Oil of cloves	℥iiss.
Oil of neroli	℥iiss.

Mix well.

Use ℥j. of the first and ʒj. of the others to the pound of powder (equal parts of starch and orris powder).

Ionone also makes a good perfume.

Nursery Powders

I

Carbolic acid	ʒss.
Boric acid	℥iss.
Powdered French chalk	℥xivss.

Triturate the French chalk with the carbolic acid gradually added, then add the boric acid and thoroughly mix them.

II

Fullers' earth	℥ix.
Boric acid	℥iss.
Zinc oxide	℥iij.
Starch	℥ix.
Orris root	℥iss.
Oil of bergamot	ʒij.

Mix the powders thoroughly, add the oil, and pass through a fine sieve.

III

Zinc oxide	℥ss.
Powdered starch	℥iss.
Boric acid	gr. xx.
Eucalyptus oil	♏x.

Mix and rub well in a mortar before sifting.

IV

Powdered French chalk	℥viij.
Fullers' earth	℥iv.
Lycopodium	℥iv.
Otto of rose	♏v.

Rub the otto of rose with the fullers' earth in a mortar until thoroughly incorporated, add the chalk and lycopodium, triturate thoroughly, and sift.

Soluble Nursery and Toilet Powders are made with pulv. acid. boric., perfumed and coloured as desired.

FACE POWDERS

Mr. H. W. Snow, an American chemist, who examined most of the face powders in the market, was not far wrong when he said that face powders have a legitimate use in the toilet of every woman, and a use which, carefully made, need not, any more than the judicious use of a perfume, displease anyone. They protect the face after washing, especially on cold or very dry days. Face powder acts partly as an absorbent and partly by protecting the skin, and prevents in a measure chapping or roughness. The belief entertained by many that face powder exercises a peculiar beautifying effect on the skin, causing the removal or disappearance of blemishes by absorption or otherwise, is perhaps not wholly without foundation, although this power is probably greatly overrated. Amongst the constituents of face powders which are supposed to exercise some medicinal or curative effect are zinc oxide and the basic salts of bismuth.

Zinc oxide undoubtedly acts physiologically, to some slight extent, on the skin. Whatever action it has is that of a mild astringent, exercising a curative effect on cutaneous eruptions and on excoriated surfaces. It also possesses a property which makes it valuable in face preparations—viz., that of imparting adhesiveness to powders containing it.

Bismuth salts (the basic chloride, basic nitrate, and basic carbonate) are reputed to be, to a slight extent, injurious, but they also exercise, though in a less degree, the same astringent effect as zinc oxide on excoriated surfaces. There is reason to believe, in view of no definite evidence to the contrary, that a large part of the value of bismuth salts externally is due merely to their being insoluble, bland, non-irritating powders. Bismuth salts are often regarded as being interchangeable with zinc oxide in the preparation of toilet articles, because they have some advantages in a physical way, and usually are contained in the higher-priced cosmetics.

Examination of the 'rice powders' of the market revealed the fact that none of them were 'guilty of adulteration even with powdered rice'; a fact probably due to the circumstance that this form of starch is far from being suitable as a face powder; wheat, maize, and potato starches are more suitable, and the French makers generally add a little zinc oxide to these.

Mr. Snow gives the following formulas as fairly representative face powders:—

		Parts
A.	Orris root	1
	Zinc oxide	2
	French chalk	2
B.	Precipitated chalk	2
	French chalk	3
C.	Bismuth oxychloride	1
	Precipitated chalk	3
	French chalk	5

		Parts
D.	Bismuth subcarbonate	1
	Zinc oxide	3
	French chalk	4
	Precipitated chalk	4
	Cornflour	5
E.	Bismuth subnitrate	1
	French chalk	25
	Cornflour	35
	Terra alba	40

		Parts
F.	Bismuth subcarbonate	1
	Zinc oxide	3
	Magnesia carbonate	3
	French chalk	5

		Parts
G.	Zinc oxide	1
	French chalk	3
H.	French chalk	4
	Zinc oxide	1
	Starch	1

Formulas A, B, and E represent the cheaper powders, like Swan Down, &c., though they do not differ very much from some of the better powders. Formulas C, D, and F represent the better grades of face powders, as seen in the case of Pozzoni's, Saunders's, and others. Formula H is modelled on Pinaud's and Rimmel's.

Pink and brunette powders can be obtained from the foregoing formulas by using carmine for the pink and fine quality of levigated burnt umber, burnt sienna, &c., or very small amounts of Armenian bole, for the brunette. Perfume, as being the most expensive part of face powders, should be judiciously chosen. Artificial perfumes, such as violet, are good for the purpose. The powder should be sifted again and again through a No. 120 sieve until a high degree of admixture is obtained.

All the solids used in making face powders must be reduced to the finest possible condition by repeated sifting or elutriation. Colouring matters should be triturated for a long time with a small proportion of the basis; so also the perfume, before adding to the bulk and sifting.

White

I

Venetian talc	℥xvj.
Bismuth subnitrate	℥j.
Zinc oxide	ʒj.
Perfume	a sufficiency

Mix.

II

French chalk	℥viij.
Zinc oxide	℥vij.
Powdered orris	℥iij.
Ionone	♏x.

Mix.

III

Precipitated chalk	℥iv.
French chalk	℥iv.
Starch powder	℥v.
Bismuth subcarbonate	℥i.
Zinc oxide	℥iij.
Oil of ylang-ylang	♏xij.

Mix.

IV

Zinc oxide	℥vij.
Venetian talc	℥xij.
Magnesium carbonate	℥iss.
Oil of millefleur	♏x.

Mix.

Parisian

I

'Crown' zinc white	℥iv.
French chalk	℥iv.
Magnesium carbonate	℥iv.
Otto of rose	♏xv.

Mix.

II

Rice flour	lb. x.
Sodium carbonate, dried	℥iv.
Powdered borax	℥iv.
Perfume	a sufficiency

Mix.

Pasma

French chalk	
Rice flour	of each equal parts
Perfume	a sufficiency

Mix.

La Blanche Face Powder

Oxide of zinc	℥iv.
Rice powder	℥xiv.
Precipitated chalk	℥iv.
Purified talc	℥ij.
Orris powder	℥ij.
Perfume	a sufficiency

Mix well and pass through a fine sieve.

Lily White Tablet

French chalk	℥vj.
Prepared chalk	℥iv.
Ess. of lily of the valley	ʒiij.
Starch mucilage	a sufficiency

Make into a stiff paste, form into tablets, and dry carefully.

Rose Tablet

French chalk	℥xvj.
Carmine	℥j.
Gum arabic	℥j.

Mix in a mortar by prolonged trituration, then add water to form a doughy mass, and fill into shallow porcelain dishes.

Pink Powder

I

French chalk	℥xvj.
Precipitated chalk	℥xvj.
Oxide of zinc	℥viij.
Carmine	ʒij. (or a sufficiency)
Otto of rose	♏x.

Rub the carmine and otto with about 2 oz. of French chalk, damp with rectified spirit ℥ss. to facilitate rapid and complete division of carmine. Triturate until the carmine is thoroughly mixed, add the other powders, and finally sift thrice.

II

(After Bloom of Ninon)

Oxide of zinc	℥j.
Starch	℥viij.
Carmine	a sufficiency
Otto of rose	♏v.

Prepare like No. I.

III

White powder, No. IV.	℥xvj.
Solution of carmine in ammonia	a sufficiency

Mix well.

Rose

Powdered starch	℥xvj
Rose pink	ʒss.–ʒi.
Otto of rose	♏xv.
Oil of neroli	♏v.

Triturate well and sift.

Blonde

I

Pink powder, No. III.	℥ij.
Yellow ochre	gr. x.

Mix.

II

White powder, No. IV.	℥ij.
Tincture of saffron	♏x.

Mix.

Skin Colour

Bismuth oxychloride	℥iiss.
French chalk	ʒx.
Starch	ʒij.
Calamine	ʒij.
Oil of ylang-ylang	♏ij.

Mix.

Swan Down

Oxide of zinc	℥viij.
Orris powder	℥iiss.
French chalk	℥x.
Essence of musk	♏x.
Jasmine extrait	ʒj.
White rose extrait	ʒj.
Cassie extrait	ʒj.

Mix thoroughly, allow to stand in the air a short time, and pass through a fine sieve.

FACE POWDER,

OR

POUDRE DE BEAUTÉ

For preserving and beautifying the complexion, and imparting to it a clear and healthy appearance, without in any way injuring the skin.

DIRECTIONS.— After washing, carefully dry the skin and apply the powder with a puff.

Diaphane Powder

(*Sarah Bernhardt's*)

Whitest Venetian talc	℥ij.
Rice flour	℥ij.
Zinc white	℥j.

Mix and perfume with a sufficiency of the following:

Oil of bergamot	♏xlv.
Oil of ylang-ylang	ʒss.
Oil of neroli	ʒss.
Eau de Cologne	ʒv.

The Rose-tinted Powder is coloured with ammoniacal solution of carmine and perfumed with a mixture of

Oil of bergamot	♏xlv.
Otto of rose	ʒss.
Oil of cinnamon	♏viij.
Essence of musk	♏viij.
Essence of white rose	ʒv.

The Yellow-tinted Powder is coloured with cadmium yellow, or, better, with yellow ochre and a trace of carmine, the perfume being a mixture of

Oil of bergamot	♏xlv.
Oil of cloves	♏xv.
Oil of cedar-wood	♏xv.
Oil of patchouli	♏xv.
Essence of new-mown hay	ʒv.

Langtry Invisible

Zinc oxide	℥xvj.
Precipitated chalk	lb. vj.
French chalk	℥xvj.
Starch	lb. ij.
Ext. white rose	℥j.
Ext. jasmine	℥j.
Ext. orange blossoms	℥j.
Ext. cassie	℥j.
Essence of musk	℥ss.

Mix well and sift three times.

Pistachio Toilet Powder

Pistachio flour (free from oil)	℥xvj.
French chalk	℥xvj.
Oil of lavender	ʒss.
Otto of rose	ʒss.
Oil of cinnamon	♏vj.

Mix.

Poudre de Riz

Starch powder . . .	℥viij.
Rice flour	℥ij.
French chalk . . .	℥j.
Orris powder . . .	℥j.
Cassie extrait . . .	ʒiss.
Jasmine extrait . . .	ʒj.

Mix well.

Any other perfume may be used.

Toilet-powder Perfume

Essence of musk . .	ʒiij.
Oil of millefleur . .	ʒiij.
Otto of rose . . .	♏xv.
Tincture of orris . .	℥j.
Tincture of benzoin . .	ʒiiss.

Mix.

This is suitable for many powders, and the oils may be increased

Face Paints.

Bloom of Roses

I

Carmin. pur. . . .	℥ss.
Liq. potassæ . . .	ʒvj.

M. et adde

Ess. rosæ alb. . . .	℥iij.
Aq. ad	℥xx.

Set aside for a few days, agitate occasionally, and filter.

II

Carmine	ʒij.
Solution of ammonia	a sufficiency

Dissolve the carmine in just enough of the solution, then add

Rose water to . . .	℥xvj.

Set aside for a few days and decant or filter.

Either of these may be retailed as Liquid Rouge.

BLOOM OF ROSES

FOR

Beautifying the Complexion.

Apply with a camel-hair brush
and dab lightly with a soft cloth.

Pearl White

Bismuth subcarbonate .	℥viij.
Rose-water . . .	℥xvj.
Orange-flower water . .	℥xvj.

The subcarbonate should be freshly precipitated by pouring 6 oz. of subnitrate dissolved in nitric acid into 10 gallons of water containing 1 lb. of carbonate of soda; wash the precipitate by decantation, drain, add the orange-flower water, and make up to 36 oz. with rose-water and a sufficiency of spirit of rose to compensate for the deficiency of odour. This provides a fine tint.

Blanc de Perle

Oxide of zinc . . .	ʒiij.
Oxychloride of bismuth .	ʒiij.
Essence of white rose . .	ʒj.
Glycerine	℥ss.
Distilled water to . .	℥vj.

Mix.

White Rose

Bismuth. oxychloridi . .	℥x.
Cretæ gallic. . . .	℥v.
Cretæ præpar. . . .	℥ij.
Glycerini	℥ij.
Aquæ	℥xxiv.
Ess. rosæ	q.s.

Mix and sift the powders thoroughly, triturate with the glycerine and water, then add the perfume. Put up in 2-oz. blue-glass squares, labelled as follows:—

WHITE ROSE
FACE PAINT.

WARRANTED HARMLESS.

(*Name and Address.*)

Kaloderm

Wheaten flour	℥xv.
Almond meal	℥iv.
Orris powder	℥iv.
Spirit of rose	℥iv.
Glycerine	℥iss.

Make into a paste, which is to be thinned with water before use, then painted on the skin.

Aurora Blush

Erythrosin	℥ss.
Glycerine	℥iss.
Spirit of rose	Oiss.
Rose-water	Oiiss.

Dissolve the erythrosin in the water, add the glycerine and perfume, and filter.

This is for colouring the cheeks and lips.

Theatrical Face Paints

Black

(Nigger-black)

Drop black	ʒij.
Almond oil	ʒij.
Cocoanut oil	ʒvj.
Oil of lemon	♏v.
Oil of neroli	♏j.

Mix.

The best drop black for this formula is made by burning camphor on a plate and inverting a basin over it to catch the soot.

Bright Red

Oxide of zinc	℥iiss.
Subnitrate of bismuth	℥iiss.
Plumbate of alumina	℥iiss.
Eosin	gr. v.
Ess. bouquet	ʒij.
Camphor	gr. xxiv.
Oil of peppermint	♏xx.
Almond oil	a sufficiency

Dissolve the eosin in the ess. bouquet and mix with the camphor and peppermint; add to the powders, and make into a paste with almond oil.

Deep Bordeaux Red

Oxide of zinc	℥ij.
Subnitrate of bismuth	℥ij.
Plumbate of alumina	℥ij.
Carmine	ʒss.
Solution of ammonia	ʒiss.
Camphor	gr. xij.
Oil of peppermint	♏x.
Ess. bouquet	ʒiss.
Almond oil	a sufficiency

Dissolve the carmine in the ammonia, and proceed as for bright red.

Skin Colour

Precipitated chalk	℥iiss.
Oxide of zinc	℥iiss.
Vermilion	ʒj. (or q.s.)
Powdered orris	ʒv.
Tincture of saffron	ʒij.
Camphor	℈j.
Oil of peppermint	♏xv.
Ess. bouquet	ʒiss.
Almond oil	a sufficiency

Make a paste.

White

Oxide of zinc	℥j.
Subnitrate of bismuth	℥j.
Plumbate of alumina	℥j.
Camphor	gr. xij.
Oil of peppermint	♏x.
Ess. bouquet	ʒj.
Almond oil	a sufficiency

Make a paste.

Theatrical face paints are sold in sticks, and there are many varieties of colours. Yellows are obtained with golden ochre, browns with burnt umber of the finest quality, and blue is made with ultramarine. These colours should in each case be levigated finely along with their own weight of equal parts of precipitated chalk and oxide of zinc and diluted with the same to the tint required, then made into sticks with mutton suet (or vaseline and paraffin equal parts), well perfumed. The foregoing primary colours afford sufficient scope for blending.

Red Powder

Powdered talc . .	℥j.
Carmine . . .	gr. x.
Solution of ammonia .	ʒss.

Dissolve the carmine in the ammonia, mix with a portion of the talc, and this with the remainder, and dry by exposure to the air.

White Powder

Powdered Venetian talc .	℥iij.
Bismuth oxychloride .	℥ss.
Carmine	gr. ss.
Oil of neroli . . .	q.s.

Mix.

Fatty Face Powders have a small percentage of fat mixed with them in order to make the powder adhere to the skin. The subjoined formula for Lanoline Toilet Powder is good and workable, and fairly typifies the manner in which any powder may be made 'fatty.' It is theatrical people who generally require this class of powder, and they have a preference for certain brands. An English patent was granted in 1889 (No. 4643) for the admixture of lanoline with powders for toilet purposes, but it did not include the use of ether, which is a great improvement.

Anhydrous lanoline . .	ʒj.
Magnesium carbonate (light)	ʒiij.
Ether	ʒij.

Put the lanoline in a mortar and dissolve in the ether, add the magnesia, and mix well. Dry and add the following.

French chalk . . .	℥ij.
Starch powder . .	℥iss.
Boric acid . . .	ʒj.
Perfume . . .	a sufficiency

Mix well.

A good perfume is

Coumarin . . .	gr. ij.
Otto of rose . . .	♏ij.

CARE OF THE HANDS AND FEET

For toilet considerations the hands and feet are secondary to the face only on account of the general association of beauty with the features. Much comfort depends upon strict hygienic conditions, and it is to maintain these or correct the results of indiscretions that the retailer is often asked for something. It is beyond the object of this manual to discuss the hygiene of the skin; but the subject is one of importance, and we again commend those who wish to specialise in skin preparations to read Dr. John V. Shoemaker's 'Heredity, Health, and Personal Beauty.'

Glycerine Preparations for the Hands.—Glycerine is a hygroscopic substance; so when it is applied in the undiluted state to the skin it produces intense smarting because it draws moisture from the tissues. On this account glycerine alone does a deal of harm when used for chapped hands. The following selection of formulas for chapped skin remedies depend almost exclusively for their healing and soothing effect upon glycerine:—

Glycerine and Rose-water

I

Glycerine . . .	℥v.
Liquid cochineal . .	♏xij.
Rose-water to . . .	Oj.

Mix.

II

Glycerine . . .	℥v.
Orange-flower water .	℥ij.
Rose-water . . .	℥v.
Distilled water .	℥viij.

Mix.

Borated Glycerine Lotion

Glycerini boracis . .	℥j.
Glycerini puri . .	℥ij.
Aq. rosæ ad . . .	℥viij.

M.

Boro-glycerine Cream

Boric acid . . .	ʒj.
Glycerine . . .	ʒvj.

Dissolve by heat and mix with

Lanoline . . .	ʒvj.
Vaseline . . .	℥j.

Add any perfume desired. The borated glycerine should be cooled before mixing with the lanoline.

Benzoated Glycerine

Benzoic acid . . .	℈j.
Tincture of Tonka . .	ʒij.
Soft soap	ʒj.
Glycerine . . .	℥j.
Rose-water to . . .	℥iv.

Dissolve the acid in the tincture and add to the glycerine. Triturate the soap with an ounce of water, mix this with the acid, &c., and make up to 4 oz. with rose-water.

This is an improvement upon the following:—

Saponis alb. pulv. . .	ʒj.
Tr. benzoini . . .	℥ss.
Glycerini . . .	℥j.
Aq. rosæ . . .	℥ij.

M.

Glycerine and Camphor Cream

(*See* Winter Cream, p. 11.)

Bay Rum Glycerine Lotion

Bay rum	℥viij.
Glycerine . . .	℥viij.
Quince mucilage . .	℥xvj.

Make the mucilage by roughly bruising 1 oz. of quince-seeds and boiling in 32 oz. of water until reduced to 16 oz. Strain through a cotton cloth, with pressure, into a mortar, and add first the glycerine, then the bay rum, and any spirituous perfume desired.

This is a nice preparation: it has a softening effect upon the skin, is not sticky like a gum, nor greasy like an ointment.

Menthol Cream

Menthol	℈ss.
Salol	ʒss.
Glycerine . . .	ʒiij.
Lanoline . . .	ʒvj.
Vaseline . . .	ʒvj.

Melt the vaseline and dissolve the menthol in it. In a warm mortar rub the salol and glycerine together, and add the vaseline and lanoline, stirring well to make a creamy ointment.

Glycero-lanoline

Tincture of benzoin . .	℥j.
Glycerine . . .	℥j.
Lanoline . . .	℥vj.

Mix.

Melrose Tablet

The following formula is for a preparation similar to the above:—

Vaseline	℥xvj.
Hard paraffin . . .	℥iv.

Melt, stir until creamy, and add the following filtered solution:—

Peruvian balsam . .	ʒij.
Oil of citronella . .	♏xij.
Oil of mirbane . .	♏v.
Rectified spirit . .	℥ss.

Pour into a tray to the depth of $\frac{7}{8}$ inch, and when cold cut with a punch into pieces $1\frac{1}{4}$ inch in diameter.

Retails in chip box at 1*d*.

Preparations which contain fatty matters should only be used at bedtime, or by those who have much housework to do. They are protective as well as healing in character, and generally make the skin feel soft and pliable. The directions in all cases should simply be to apply after washing and well drying the hands, and to wipe off the superfluous cream or lotion with a soft towel.

Manicure Preparations.—'Manicure' we owe to Americans, the most cultured of whom devote a large share of their toilet to trimming the nails, polishing them, removing skin callosities, and otherwise endeavouring to give the hands a refined appearance. The following are some of the principal materials and preparations required in addition to implements:

Finger-nail Polishes

I

Putty powder . . .	℥viij.
Carmine	℈j.
Otto of rose . . .	♏vj.
Oil of neroli . . .	♏v.

Triturate well together.

II

Oleate of tin (in powder) .	℥ij.
Powdered pumice . .	℥iss.
Oil of lavender . .	♏v.

Mix well by trituration, and sift three times through a No. 120 sieve.

III

Cinnabar . . .	ʒj.
Fine emery powder . .	℥j.
Essential oil of almonds .	♏ij.

Triturate until uniformly mixed, and sift two or three times.

IV

Putty powder . . .	℥iv.
Liquid cochineal . .	ʒj.

Bay rum glycerine lotion, a sufficiency to make a smooth and soft paste.

The powder polishes are preferred. They should be put up in bottles with a sprinkler stopper, so as to enable the powder to be placed easily on the chamois polisher.

The first step in beautifying the nails is to lather well in warm water with a good pure soap. When dry, and while soft, trim the points with scissors and smooth with pumice or the file. Push the skin all round the edges to show the shape of the nails and the half-moon at the base. Ragged bits of skin should be removed, then the polishing powder used, rubbing equally all over. Finally a varnish may be applied, but it generally suffices to touch the nails with a little toilet lanoline or similar cream.

Nail-varnish.

Hard paraffin . . .	ʒj.
Otto of rose . . .	♏iij.
Chloroform to . . .	℥ij.

Dissolve.

White-spot Remover

Myrrh	℥j.
Black pitch . . .	℥j.

Melt together and make into a plaster.

Bits of the 'white-spot remover' are to be applied at night, covered with a bandage, and removed in the morning, the adhering plaster being washed off with spirit of turpentine perfumed well with lavender.

Finger-tip Colouring

Alkanet	℥ss.
Rectified spirit . .	℥xij.
Rose-water . . .	℥iv.

Macerate for a week, add 10 drops of otto of rose, shake, and filter.

A solution of eosin is also used: it should be made with perfumed spirit.

Nail-bleach

Acid. sulph. dil. . .	ʒij.
Tr. myrrhæ . . .	ʒj.
Aq. lavand. . . .	ʒiij.
Aq. ad	℥iv.

M.

To whiten the nails dip the tips of the fingers in the lotion after washing.

Whitening the Hands is one of the principal features of manicure as practised at home. The more common articles required are subjoined. Chemists are often asked for 'something to whiten ladies' hands.' Looking at the matter in an unsophisticated way the request seems a trifle ridiculous, for 'ladies' consider that white hands, naturally so, are the mark of breeding and all that implies their ladyhood. Once the hands begin to dip into the various kinds of kitchen-work, which implies wetting them, the skin loses its natural softness and becomes red. The druggist is asked to provide a balm for this — to effect a cure while the cause is continued. There is no sovereign balm at all—no sure and certain cure except a good spell of idleness. But that need not prevent an attempt to do what is possible with such things as are given here.

Hand-bleach

Zinc. oxidi . . .	ʒj.
Bismuthi subnit. . .	ʒss.
Ol. amygdalæ . .	ʒiij.
Lanolini anhydros. . .	℥j.
Glycerini . . .	ʒj.
Spt. camphoræ . .	ʒj.
Aquæ rosæ . . .	ʒiij.
Otto rosæ . . .	♏iij.

M.S.A.

This salve is to be rubbed well over the hands at night. Accompanying it should be very complete directions as to the care of the hands. After housework of any kind in which the hands have been wetted or otherwise soiled, they should be thoroughly cleaned by washing with a loofah and a good, pure soap, preferably superfatted. The water should have the chill just taken off. Dry thoroughly with a warm towel and apply a little of the ointment to the back of the hands, especially at the wrists and over the knuckles. Rub off the ointment with the towel. During the night, and after application of the ointment, a pair of white kid gloves (*not* an old, but a clean pair), a size too large for the hands, should be put on.

Lemon Soap

Curd soap . . .	℥vj.
Eau de Cologne . .	℥ij.
Lemon-juice . . .	℥ij.

Shred the soap finely and place in a suitable dish with the eau de Cologne and lemon-juice. Warm gently until a uniform fluid is obtained and pour into moulds. When it sets put in a warm place. A little eau de Cologne may be sprinkled over it for the first day or two. This preparation is to be used as a toilet soap. It looks most unreasonable and unscientific, but we have found it to go all right.

Scotch Oatmeal

Medium oatmeal . .	lb. j.
Perfume essence . .	ʒj.

Sprinkle the perfume over the meal, and put up in bag or bottle.

Purified Bran

Bran	℥xv.
Powdered orris . .	℥j.
Essence of violet . .	ʒj.
Or ionone . . .	♏x.

Mix and pack suitably.

Almond Meal.

I

Farinæ tritici	℥v.
Pulv. iridis	℥ij.
Pulv. sapon. alb.	ʒij.
Pulv. boracis	ʒij.
Ol. amygdal.	ʒij.
Spt. vini rect.	ʒij.
Ol. amygd. amar.	♏ij.
Ext. millefleur	q.s.

M.

II

Oatmeal	lb. iv.
Wheatmeal	lb. j.
Almond oil	℥iij.

Mix and add

Powdered borax	℥iij.
Powdered orris	℥iij.
Oil of lemon	ʒiij.
Oil of verbena	♏xx.
Oil of bitter almonds	♏xv.

Mix.

Cosmetic Pastes and Creams are for applying at bedtime to make the hands white. They are either rubbed directly upon the hands, which are then covered with a pair of gloves to be worn all night, or a pair of gloves several sizes too large are opened and one or other of the following preparations rubbed on the inside of the leather. The gloves are then put on the hands and secured.

I

Oil of almonds	ʒiij.
Tincture of benzoin	ʒj.
Glycerine	ʒij.
Rice flour	ʒij.
Rose-water	℥j.
Yolks of two eggs.	

Make an emulsion by beating well together.

This requires the addition of some perfume, such as ylang-ylang.

II

Yellow wax	℥ij.
Myrrh	℥j.

Melt together and decant the clear liquid into a warm mortar and mix with it

Honey	℥iv.
Spirit of rose	ʒvj.

Glycerine, a sufficiency to make a smooth paste which will spread easily.

Removal of Warts.—Warts are thickened epidermis in an atrophied condition. They are contagious—that is to say, if a wart bleeds the blood may infect other parts of the skin of the same individual, or may infect other persons; but there is some degree of idiosyncrasy in the matter. There are many cures for them, 'the morning or fasting spittle' being perhaps the most ancient. Another is pipe-clay rubbed in dry two or three times daily, which is said to cure warts in a few weeks. The safest and best escharotic is glacial acetic acid applied morning, noon, and night with a camel-hair pencil. Nitric acid is also good. The wart should be scraped occasionally. Salicylic collodion is useless. Ten-grain doses of sulphate of magnesia taken early in the morning have a good reputation; indeed, any magnesia salt undoubtedly influences the callosities. The treatment must be continued some weeks.

CHILBLAINS

Chilblains are evidence of feebleness. Persons afflicted with them have feeble vitality, feeble circulation, and are poorly nourished. These conditions, combined with low temperature, and assisted by pressure, set up in the hands and feet sub-acute inflammation of the cellular tissues, which shows itself in slight reddish and tender swellings. When the parts affected become warm, as at night time, the circulation increases, and with it the serous effusion, the result being a feeling of uncomfortable warmth and frequently intense throbbing and pain of the parts affected. Stimulation, as by rubefacient liniments, and absorption, as by iodine preparations, are the topical remedies indicated. The former class of remedies are the more popular. But it is well to note that children especially should have nutrition assisted by the administration of malt and oil, or similar preparations.

Sir Benjamin Ward Richardson, M.D., considered that those who suffer from chilblains are a distinct class of the community. They are those to whom the old saying 'A cold hand and a warm heart' can most fitly be applied. They have a stiff fight for life, and in life's battle those who are most afflicted, whose whole organism may be said to show a 'chilblain circulation,' are described by Sir Benjamin as having certain outward objective signs, viz. 'the eyeball small; the lobe of the ear small or absent; the hair scanty and delicate; the teeth small, if not irregular or defective; the hands small as well as cold, and wanting in strong grip; the feet small, and the tread dainty or infirm; the manner nervous or irritable; the stature either of medium height and broad, or very tall.' Professor A. E. Wright, of Netley Hospital, has, however, found that the blood of persons liable to chilblains takes about three times longer to coagulate than the normal time (three to four minutes).

This condition obtains in children (whose blood is deficient in calcium, owing to bone-formation), in those liable to nose-bleeding and urticaria, in those of lymphatic habit of body, in persons subject to malarial cachexia, and in those of hæmophilic constitution. He states that such cases are rapidly cured by the administration of 6 to 30 gr. of calcium chloride three times a day. The cure takes from two to ten days only.

There is no sovereign cure for chilblains. That is to say, 'a cure' is generally taken to be synonymous with 'a liniment,' and it is obvious that since the disorder depends primarily upon constitutional weakness any application can only be in the nature of a relief. Physicians have as curious ideas as other people about treatment, so we find that the very thing which one lauds to the skies is considered a failure by others.

As a general rule it may be taken for granted that tight boots and gloves should be avoided. The feet especially should be kept warm with woollen socks, a dry pair being put on every day. We give a selection of formulas, most of which have been found to be useful, and from the variety the retailer will have no difficulty in selecting one or more preparations suitable for specialising.

I

Acidi carbolici	gr. vj.
Lin. belladonnæ	ʒij.
Lin. aconiti	ʒj.
Collodii flexilis	℥j.

S. et M.

To be painted on the parts affected every night.

II

Tr. iodi	℥ss.
Collodii	℥ss.

M.

To be painted on night and morning.

III

Acidi carbolici	℈ij.
Spt. camphor.	ʒij.
Spt. rectificat.	ʒiv.
Tr. opii	ʒij.
Aq. ad	℥iss.

M.

To be applied on lint at bedtime.

IV

Guttapercha tissue	℥iss.
Yellow resin	℈v.
Chloroform	℥xx.

Dissolve.

To be applied night and morning.

V

Lin. aconiti	℥iij.
Potassii iodidi	ʒij.
Camphor.	ʒj.
Glycerini	℥j.
Ol. succini	℥ij.
Spirit.	℥xvj.

Dissolve the iodide in 2 dr. of water and add to the glycerine. Then mix with the rest of the ingredients.

To be painted on the parts night and morning

VI

Camphor	ʒij.
Cantharidis	ʒij.
Table mustard	℥ss.
Oil of cajuput	℥j.
Oil of rosemary	ʒiij.
Alkanet	ʒij.
Oil of turpentine	℥x.

Macerate ten days and filter.

Rub in night and morning.

VII

Curd soap	℥j.
Water	℥iv.

Dissolve by heat and add

Camphor	ʒiv.
Spirit	ʒvj.
Oil of bergamot	♏xlv.
Strong solution of ammonia	ʒvj.

Mix.

To be used as a liniment.

VIII

Iodoform	ʒij.
Oil of thyme	ʒss.
Oil of eucalyptus	℥j.

Rub well in a mortar until nearly all the iodoform is dissolved, then decant the clear portion.

Apply freely to the inflamed part morning and evening.

IX

Tincture of arnica	℥j.
Oil of turpentine	℥ss.
Spirit of camphor	℥j.
One egg.	
Dilute acetic acid	℥viij.

Beat the egg well up, and make an emulsion with the oil, &c.

After bathing the feet in hot water and drying, rub this liniment into the parts affected and allow to dry before the fire.

X

Lin. saponis	ʒvj.
Lin. belladonnæ	ʒij.
Liq. epispastici	ʒj.

M.

To be painted lightly over the parts affected night and morning.

XI

Acid. hydrochlor.	ʒss.
Bals. peruviani	ʒss.
Tr. benzoini co.	℥ss.
Spt. rectificat.	℥ss.

M.

To be applied on lint when the parts are irritable.

XII

Chloroform.	℥ij.
Camphor.	ʒiij.
Tr. cantharid.	ʒvj.
Tr. iodi	ʒij.
Glycerini	ʒiv.
Liq. cocci	ʒij.
Spirit. ad	℥x.

M.

Use in the same way as No. x.

Frost-bite Pencil

Paraffin	ʒix.
Olive oil	℥iiss.
Camphor	ʒj.
Iodine	ʒj.
Spirit	ʒij.

This does not work well, we find, but the following modification is satisfactory:—

Camphor	℈j.
Iodine	℈j.

Rub up to fine powder with sufficient spirit and add

Olive oil	ʒiiiss.

Mix. Then melt with heat

Olive oi	ʒiiss.
Paraffin	ʒiiiss.

Mix with the rest and pour into moulds.

To be used night and morning.

Chilblain-tablet

Yellow resin	℥j.
Yellow wax	℥iij.
Benzoated lard	℥vj.
Oil of cajuput	℥j.
Camphor	℥j.

Melt the first three together and strain if necessary. When cooled a little add the camphor and oil, and pour into suitable moulds, such as ½-oz. gallipots cooled in ice water.

Use it night and morning.

Broken Chilblains should not be treated with any of the foregoing, otherwise much damage may result. Boric ointment and Turner's cerate are good dressings for them, and the following is an unfailing healer:—

Ung. hydrarg. ox. flav.	ʒij.
Ung. zinci ad	℥ij.

M.

To be used as a dressing night and morning.

CORNS

Cures for corns are likely to last while boots are worn. That was probably the view of the matter taken by the German who advertised an unfailing remedy, which applicants found to be this quaint quatrain:—

Sind Ihre Hühneraugen gross,
So dass von Schmerz Sie schwitzen?
So sägen Sie die Zehen los
An denen solche sitzen.

Which in free English assumes the following guise:—

Have you large corns upon your toes,
So that with pain you sweat, sir?
Then take a saw and saw off those
On which your corns are set, sir.

The cynic recommended for this purpose his bone-saws at 10*s*. to 30*s*. apiece—a most effectual remedy!

A corn is simply a growth of the epidermis; in fact, a hardened tumour of skin which takes the form of a little knot or cone. It is caused by pressure, and when it is big enough the pressure forces the point into the tissue, and thus causes pain. There are hard and soft corns. The latter are recent, and often exist between the toes. These are most easily removed: any softening application, such as glycerine or soft soap, suffícing to make them soft enough to remove with the finger-nail. Salicylic acid preparations are also admirable for these. Hard corns are more difficult to remove, and without a knife or a corn-rubber medicinal applications alone have little effect upon them. Hence it is important that it should be stated on all such preparations that the corns should be pared before they are applied, and further assistance to the remedy must be supplied in a tepid-water foot-bath every other night, after which an attempt should be made to pick out the corn with the finger-nails.

The most popular and in many respects the most effectual remedies for corns are those containing salicylic acid. In these extract of Indian hemp is generally found—why it is difficult to say, but it gives a nice colour and acts faintly as a sedative. Salicylic collodion is apt to become gelatinous in the bottles, and this is supposed to be due to some chemical change, such as happens rarely with collodion itself. Probably the pyroxylin changes to the insoluble gun-cotton. But the chief cause of gelatinisation in salicylic collodion is bad corks, or phials with imperfectly rounded necks which permit ether to evaporate. This point should be noted by those who put up the paint. Pyroxylin made from paper is better than nitrated cotton, as it gives a more limpid collodion.

I

Acid. salicylic. . .	ʒj.
Ext. cannab. ind. . .	gr. viij.
Collodii flexilis . .	℥j.

S.

This is the original formula, which came from Russia in 1882. It is too thick, and Mr. Martindale recommends collodion of three-quarters strength.

Directions.—Paint every night for three nights, soak in warm water, then scrape with a knife, and continue the treatment until the corn disappears.

II

Pyroxylin. . . .	ʒij.
Acid. salicylic. . .	℥iss.
Ext. cannab. ind. . .	ʒv.
Bals. canadensis . .	℥ss.
Ol. ricini . . .	ʒij.
Æther. meth. . . .	℥ix.
Spt. rectificat. . .	℥iv.

Put the pyroxylin in a bottle and pour half the spirit upon it. Shake, add the ether, and shake until dissolved. Add the rest of the ingredients in the above order, dissolving the acid in the remainder of the spirit.

Salicylic acid is the active ingredient in the preparation. It quickly reduces hardened cuticle. The Indian hemp acts slightly as a local anæsthetic, but its presence in the recognised quantity is almost immaterial except for the colour, which the public demand. It may be replaced by ext. belladonnæ, or other vegetable extracts, without diminishing the efficacy. The preparation is exceedingly popular and useful, and the names for it are legion. The second formula is a good working one.

The paint is frequently put up in phials with a rubber-covered cork to which a camel-hair brush is attached. The paint should be applied night and morning, the feet being bathed in warm water every second or third night, and as much of the corn picked off as will peel away. Then apply the paint.

Care should be exercised in wording the label, especially if medicine-stamp duty is to be avoided. Retailers will find good advice on this point in Alpe's 'Handy Book of Medicine-stamp Duty.' Collodion is not an essential ingredient, and those who find it unsatisfactory may try either of the following formulas, which are good :—

Green Corn-paint

Acid. salicylic. . .	ʒj.
Ext. cannab. ind. . .	gr. v.
Resin. commun. . .	ʒj.
Spt. rectificat. . .	ʒiij.
Æther. methyl. . .	ʒv.

M. et S.

Amber Corn-paint

Acid. salicylic. . .	ʒj.
Resin. commun. . .	ʒj.
Æther. methyl. . .	℥j.

M. et S.

To be used in the same way as salicylic collodion.

Corn Plasters.—Felt corn plasters are coated with a solution of isinglass, and are not in any sense a cure—simply a protective. The following formulas, however, are for preparations which act upon the corn, and remove it or assist in its removal :—

I

Acid. salicylic. . .	ʒij.
Emp. belladon. . .	ʒij.
Emp. resinæ . . .	℥ij.

Melt the plasters by a gentle heat and stir in the acid.

II

Acid. carbol. . . .	♏xx.
Cupri acetat. . . .	ʒj.
Emp. resinæ . . .	℥iss.

Melt the plaster and add to it the acetate in fine powder previously mixed with the acid.

The plaster should be spread on swansdown and cut into discs ½ inch in diameter, or be spread in circles that size upon oval-shaped pieces of adhesive plaster 2 inches long and ¾ inch wide at the centre, so as to envelope a toe.

COMEDONES, OR BLACKHEADS

By either of these popular names it is customary to designate that annoying but not deadly disorder of the sebaceous glands of the skin technically termed *Acne punctata*. From various causes, chief of which, perhaps, is torpidity in regard to personal hygiene, these glands become overcharged or plugged with the sebaceous secretion, that part of the fatty matter nearest the surface becomes black by absorbing dirt, and so we get a blackhead or comedone. It can be squeezed out, when it looks like a worm, and some folks still imagine that the string of fat *is* a worm. When there are only a few on the face, that is the shortest way of getting rid of them—viz., to press the tube of a watch-key upon each spot, bathe with warm water and soap, and paint on some spirit of camphor. But when the spots are numerous the trouble must be regarded as a disease; and it is so, for more or less irritation arises, and it is necessary to treat it as a skin disease.

Strict hygienic conditions must be insisted upon. The people afflicted with comedones are those pasty-complexioned individuals who seem afraid of soap and water, and to whom a rough towel, a smart walk, and other vigorous things which make for health and happiness are abhorrent. If they wish to get rid of their blackheads they must inaugurate personal reform.

Dr. McCall Anderson, in common with other dermatologists, insists upon this. He recommends washing the parts every night and morning with very hot water. Afterwards apply friction with a rough towel (unless there be, as there sometimes is, much inflammation about the pimples). Vapour and Turkish baths, with thorough shampooing, are also useful.

The remedy which enjoys the greatest reputation is sulphur in some shape and form, such as:—

Sulphur	ʒj.
Glycerine	ʒj.
Cold-cream	℥j.

Mix.

To be applied freely every night, short of causing pain or inflammation.

A lotion which is much appreciated is the following :

Precipitated sulphur	ʒij.
Camphor	gr. x.
Gum arabic	gr. xx.
Lime-water	℥ij.
Rose-water	℥ij.

Mix.

Shake the bottle and apply at bedtime, and in the morning remove the sulphur without wetting the skin.

The use of any remedy must be stopped if it inflames the skin, and begun again when the inflammation subsides. While this inflammation continues the person should wash with ichthyol soap. Internal treatment is decidedly beneficial, and we have found the following a safe and efficacious skin tonic :—

Liquor. arsenicalis	♏xl.
Potass. bicarb.	ʒiss.
Tr. gent. co.	℥j.
Tr. card. co.	℥ss.
Aq. chloroformi ad	℥viij.

M.

Dose : A measured tablespoonful thrice daily immediately before food.

Regulation of the bowels should not be overlooked. An occasional dose of a saline is beneficial ; *e.g.*, a teaspoonful of Epsom salts in a teacupful of hot water at bedtime, or the following the first thing in the morning :—

Potassii chloratis	gr. iij.
Magnes. sulphat.	ʒss.
Sodæ tartaratæ	℈ij.
Aq. menthæ pip.	℥j.

S.

To be followed in a quarter of an hour by a cupful of hot tea.

We give here a selection of formulas for applications which have been recommended, and which have been proved to be useful. These are suitable for putting up as proprietary preparations.

Dr. Tilbury Fox's Ointment

Ol. cadini	ʒss.
Adipis præparat.	℥j.

Ft. ung.

Excellent for allaying irritation, but the odour is against it.

Unna's Ointment

Solution of hydrogen peroxide	℥j.
Vaseline	℥j.
Lanoline (anhydrous)	℥ij.
Acetic acid	ʒj.

Mix the lanoline and vaseline

together and incorporate the peroxide and acetic acid by trituration. Finally perfume with a few drops of neroli or ylang-ylang.

Kaolin Ointment

Kaolin	ʒviss.
Glycerine . . .	℥ss.
Acetic acid . . .	ʒiij.

Make a paste, which is to be applied to the skin at bedtime.

This is not suitable when the comedones are inflamed; it is too irritating. But it is an excellent stimulant.

Resorcin Ointment

Zinci oxidi . . .	ʒj.
Resorcin. . . .	ʒj.
Vaselini	ʒvj.
Otto rosæ . . .	gtt. ij.

M.

Apply to the affected parts at bedtime and wipe off in the morning. An excellent soother.

It should be understood that all these applications only allay irritation and stimulate the glands. To superficially remove the blackhead Dr. Shoemaker recommends :—

Æther. rect. . . .	℥j.
Lin. saponis . . .	℥j.

M.

To be rubbed into the affected parts at night and washed off in the morning.

Unna's Red Nose Ointment

Sulphur. . . .	ʒj.
Pulv. amyli oryzæ . .	ʒiiss.
Ung. zinci . . .	℥iss.
Ol. rosæ geran. . .	gtt. v.

M.

To be applied at bedtime.

FEET-POWDERS

The armies of Europe seldom go on the march, in time of peace at least, without a good supply of dusting powder for the feet, which are the most vulnerable point, as was admirably shown in the autumn manœuvres of Aldershot troops in 1895. It is friction and perspiration together which blister and skin heels and toes.

Hyperhydrosis is recognised by physicians as a disease. It affects the feet, armpits, palms of the hands, and the inside of the thighs particularly, and in certain states of health it may suffice to make the sufferer weak. It is beyond the province of this book to deal with such cases; but it may be explained that the malodorous condition which accompanies perspiration is now believed to be the result of the action of a specific microbe, *Bacillus hyperhydrosis*, upon sweat. Hence antiseptic treatment is perfectly rational: it may prevent perspiration, and it certainly makes it tolerable and checks the foul odour.

Powders.—As the best method of using these is to dust the socks with them, the powders should preferably be put up in boxes with perforated tops. It is also useful to put some of the powder in the shoes.

I

Salicylic acid	ʒj.
French chalk	℥iv.

Mix.

Zinc oxide ℥ss. may be used instead of the acid, but it is not so effectual.

II

Salicylic acid	ʒj.
Powdered zinc oleate	℥iss.
Starch powder	℥iij.

Mix.

III

Salicylic acid	℥ss.
Boric acid	℥iv.
Violet powder	℥viij.
Eucalyptus oil	ʒj.

Mix.

IV

Boric acid	℥j.
French chalk	℥iij.
Oil of bergamot	♏v.

Mix.

No. I. is as good a preparation and efficient antiseptic as any. A similar powder is used in the German Army. We may note here that the powdered French chalk should be Purified Talc. To get this make French chalk into a thin cream with a mixture of hydrochloric acid 1 part and water 2 parts. Allow to stand for an hour or two, then add much cold water; allow to settle, decant, again wash, and so on until free from acid. Then collect, dry, and sift. For blistered feet No. II. is best. Boric acid powders are excellent. The addition of much essential oil is a mistake. No. III. comes in this category. A drop or two of oil may be added to each ounce of powder as a perfume, nothing more.

ANTISEPTIC FOOT-POWDER.

AN AGREEABLE AND EMOLLIENT PREPARATION FOR KEEPING THE FEET COOL AND SWEET IN THE WARMEST WEATHER.

Directions.—The powder should be freely dusted over the feet, and into the toes and heels of the socks before walking, and after changing the socks on returning.

Early in the eighties a formula began to appear in druggists' journals which has become quite noted (on paper) as a foot-powder for counteracting perspiration. We give it in its common form :—

	Parts
Carbolic acid	1
Dried alum	4
Starch	200
French chalk	4
Eucalyptus oil	2

We have traced this to its original source, and find that it was recommended as a foot-powder for Preventing Chilblains! Such errors as this happen not infrequently, it may have been noticed. As has already been said, practically all that is wanted for perspiring feet, so far as retail trade is concerned, is an efficient antiseptic, preferably with a soapy feeling, which both boric acid and zinc oleate powders have. The latter has the distinct advantage of being an excellent healing agent, but it is too expensive for liberal use. Boric acid may be combined with various substances, such as betanaphthol (10 p.c.), creolin (4 p.c.), benzoic acid (1 p.c.), zinc borate (25 p.c.), each having points which make it more acceptable to some people.

Those troubled with hyperhydrosis must wash the feet every night with some antiseptic soap and very warm water. After drying, some of the foot-powder should be dusted upon them with a puff. Witch-hazel preparations, such as hazeline, are exceedingly good to apply just after washing; and great benefit is derived from bathing the feet in warm water to which a teaspoonful of Condy's Fluid and a tablespoonful of vinegar have been added. Many lotions have from time to time been recommended, especially some containing liq. plumbi subacet. or liq. ferri perchlor.; but our experience is that these are not so generally advantageous as dusting powders, and therefore not suited for putting up as specialities.

COLD-CREAM

This is one of the unguents of antiquity. The inscription on our ointment-pots, 'Ceratum Galeni,' dates back to the second century of the Christian era, when Claudius Galenus

Pergamenus Galenos, the originator of the salve, was an imperial physician at Rome. In the course of ages the composition of the cerate has altered considerably, but the cold-cream of the nineteenth century resembles that of the second in containing water. This is an essential ingredient, but whether intentionally added, or unintentionally incorporated with the fat in the process of manufacture, history sayeth not. It may, however, be noted that in Culpeper's day cold-cream was made by melting 4 oz. of white wax in 1 lb. of 'oyl of roses omphacine,' the heat of a water-bath being used, stirring constantly, pouring from one vessel to another while it cooled, and lastly washing it with rose-water. It thus happened that a considerable amount of the aqueous fluid was incorporated with the fat, and thereby the principal property of the cream was ensured, viz. its remarkably cooling effect upon the skin. This effect arises from the slow evaporation of the water contained in the preparation.

Some people say—but with what authority they do not venture to tell—that the ideal cold-cream should be one-half fat and one-half water. The ideal is seldom, if ever, attained, the difficulties of compounding and preserving such a preparation being almost insuperable. The preparation is really an emulsion without an emulsive agent, and as two of its components are exceedingly prone to become rancid—a tendency which is accelerated by the fine division of the fat-globules—it is highly desirable to use only perfectly fresh ingredients, especially white wax which is untainted.

The correct method of compounding cold-cream is given in the appendix to the following two formulas, which are typical of high-class preparations :—

I. Unscented

White wax . . .	℥iij.
Spermaceti . . .	℥iij.
Almond oil . . .	℥xvj.
Rose-water . . .	℥viij.

II. Cold-cream of Roses

White wax . . .	℥iiss.
Spermaceti . . .	℥v.
Almond oil . . .	℥xvj.
Rose-water . . .	℥vj.
Otto of rose . . .	♏xx.

The wax and spermaceti should be cut small and melted over a water-bath. A 2-lb. jar will do perfectly for that, placing it in a saucepan of boiling water with a layer of tow at the bottom of the pan to prevent the jar being heated too strongly. When the solids have melted add the oil in three or four portions, stirring all the time. Now transfer the mixture to a large Wedgwood mortar, which has been made quite hot by filling with boiling water. Stir the mixture with a bone spatula for ten minutes; then add a portion of the water prescribed, and work it in by stirring constantly, continuing this until the whole of the water has been worked in. This is somewhat more than a labour of love; generally two or three hours elapse before the preparation assumes the appearance of a thick cream, and up to this point stirring must be continuous. The perfume may now be added, and the cream stirred for a few seconds every five or ten minutes, to prevent it setting hard, which it will do if left alone.

The cream can also be made by melting the solids in a large, wide-mouthed bottle, adding the oil, then the water (hot), and shaking the whole energetically until a thick cream is formed. This method is good but thoroughly unorthodox. The cream made according to either of the above formulas is brilliantly white, the first being softer than the other, and better adapted for winter use. Both are suitable for potting, but when well perfumed with otto are rather expensive for retailing in smaller quantities than 6*d.* pots. The following formulas also provide superior preparations :—

III

Ceræ alb.	ʒvj.
Cetacei	℥iss.
Ol. amygd. . . .	℥viij.
Aq. destil. . . .	℥iv.
Boracis	ʒj.
Ol. rosæ virg. . .	♏x.
Ol. bergam. . . .	♏xx.

Melt the fats, &c., in the usual way, and when getting creamy, on cooling, add a warm solution of the borax in the water (*sec. art.*); then add the perfumes.

IV. **French Codex Form**

Cetacei	ʒvj.
Ceræ alb. . . .	℥iij.
Ol. amygdal. . . .	℥xxiss.
Otto rosæ . . .	ʒij.
Aq. rosæ . . .	℥vj.
Tr. benzoin. (1 in 5) .	℥iss.

Proceed in the ordinary way, but mix the tincture with the rose-water and stir this mixture in.

V. **American Recipe**

Ol. amygdal. . . .	℥vj. ʒij.
Cetacei	℥ij.
Paraffin. dur. . . .	ʒiv.
Aq. rosæ . . .	℥iij.
Glycerin. . . .	ʒv.
Pulv. sapon. alb. . .	ʒj.

Melt the soap with the oil, spermaceti, and paraffin, and proceed in the usual manner.

VI. **With Lard**

White wax . . .	℥ij.
Spermaceti . . .	℥iij.
Almond oil . . .	℥viij.
Benzoated lard . .	℥v.
Water	℥vj.
Otto of rose . . .	♏x.
Oil of bergamot . .	♏x.

Prepare as Nos. I. and II.

The use of lard is not objectionable, and it favours whiteness at the finish. The addition of borax or soap enables the cream to be finished off in much less time, and these substances have the property of producing a wonderfully white cream, while the borax acts also as a preservative. The quantity of borax used varies between ʒj. and ℥ss. to the pound (*see* No. III.). It forms a trace of soap, and thereby acts as an emulsifier; but it should never be employed in first-class cold-cream. If a preservative is desired there is nothing better than rectified spirit with a little chloroform. The proportions required are shown in the next formula.

VII. With Nut Oil and Spirit

Spermaceti	℥iij.
White wax	℥iij.
Nut oil	℥xxij.
Water	℥iv.
Rectified spirit	ʒj.
Chloroform	♏x.
Oil of rose-geranium	♏xxx.
Oil of bergamot	♏vj.

Prepare as already directed, dissolving the chloroform and oils in the spirit, and adding the solution when the cream is getting cold.

VIII. With Spirit

Cetacei	ʒx.
Ceræ albæ	ʒx.
Ol. amygd.	℥x.
Aq. dest.	℥ij.
Spt. rectif.	℥ss.
Otto rosæ	♏xx.

Proceed as in No. VII.

The spirit here enables much less water to be used, because it is a better 'cooler,' and for this reason is often prescribed in ointments by dermatologists; but it is right to note that any divergence such as this from the recognised form detracts from the genuineness of the 'cold-cream.' For the same reason creams made with soft paraffin (white vaseline) do not come within the correct designation, and this mainly because it is impossible to incorporate the usual proportion of water with vaseline. But the introduction of lanoline enables us to produce a cream free from the objections to the old form, as regards proneness to rancidity, lanoline not only having the property of mixing with its own volume of water, but of enabling us to mix water with substances which otherwise do not mix with it. When 'cerat. Galeni' occurs in a prescription such a preparation as No. I. should be dispensed, and never any cold-cream containing soap or alkali.

IX. Vaseline

Paraff. moll. alb.	℥xiv.
Paraff. dur.	℥j.
Lanolin.	℥iv.
Aquæ	℥vj.
Otto rosæ	♏xv.
Vanillin.	gr. iv.
Spt. rectificat.	ʒij.

Melt the paraffins on a water-bath, pour into a warm mortar, add the lanoline, and with constant stirring incorporate the water. When of the consistence of a thick cream add the perfumes dissolved in the spirit.

X. Dieterich's Vaseline

Ceræ alb.	℥iiss.
Cetacei	℥iiss.
Ol. amygdal.	℥xivss.
Vaselin. alb.	℥viss.
Aq. destillat.	℥viss.
Boracis	ʒiiss.
Coumarin.	gr. j.
Otto rosæ	♏xv.
Ol. bergam.	♏xv.
Ol. ros. geran.	♏iv.
Ol. rhodii	♏ij.
Ol. iridis	♏j.
Ess. zibet. (civet)	♏v.

Dissolve the borax in the water and allow the melted fats to become cream before adding the water, and proceed *sec. art.*

XI. Lanoline

Lanolin.	℥viij.
Paraffin. liquid.	℥ij.
Aq. rosæ	℥iv.
Vanillin.	gr. ij.
Otto rosæ	♏vj.

Mix in a mortar without heat.

XII

		Summer
Ol. amygd. dulc.	℥x.	
Ceræ alb.	℥iss.	℥ij.
Cetacei	℥iss.	℥ij.
Lanolin.	℥ij.	
Aquæ	℥v.	
Boracis	gr. xx.	
Aq. rosæ conc. (1–40)	ʒij.	
Ol. geranii	♏xl.	
Ol. santal. flav.	♏x.	
Ol. bergamot.	♏x.	

M.S.A.

Lanoline itself makes a very good cold-cream, but it is somewhat sticky, and for that reason is the better for the addition of the heavy mineral oil indicated in No. XI. For cheapness pale nut oil may take the place of almond oil in any of the first six formulas, using less perfume. The following recipes are also reliable :—

XIII. A German Recipe

Ceræ albæ	℥iv.
Cetacei	℥v.
Ol. arachis	℥xxxij.
Aq. rosæ	℥xvj.
Boracis	℈iv.
Otto rosæ	♏xv.

M.S.A.

XIV. A French Formula

Vaselin. alb.	℥x.
Ol. amygd.	℥j.
Ceræ alb.	℥j.
Aq. rosæ	℥j.
Ol. ros. geran.	♏v.

M.S.A.

XV

Adipis	℥xij.
Vaselin.	℥iv.
Aq. bullient.	℥v.
Boracis	ʒiij.
Ol. ros. geran.	♏xx.

Prepare in the same way as No. XIX.

XVI

Ceræ japonic.	ʒxviij.
Ol. arachis	℥xiiss.
Aq. rosæ	℥vj.
Ac. boric.	ʒij.

Melt and beat thoroughly in a mortar.

XVII

Cetacei	℥xss.
Ceræ alb.	℥xss.
Ol. amygd.	℥xlviij.
Aq. rosæ	℥xvj.
Ol. bergam.	ʒij.
Ol. rosæ	ʒiss.
Acid. salicylic.	gr. 160

M.S.A.

XVIII

Vaselin.	℥ix.
Cetacei	℥j.
Ol. amygd.	℥ij.
Aq. rosæ	℥ivss.

M.S.A.

XIX

Petrosin. alb.	lb.ivss.
Ceræ alb.	℥viss.
Cetacei	℥ivss.
Aq. rosæ tripl.	℥xviij.
Otto rosæ	ʒiss.

Melt the first three by the heat of a water-bath, and while cooling add the water and the otto of rose. Beat thoroughly, for the better this is done the better will the cream be.

XX. **Cold-cream Perfume**

Ol. neroli	♏xv.
Otto rosæ	♏xlv.
Coumarin.	gr. xv.
Ol. ros. geran.	♏viij.
Essent. ambergris	♏v.
Ol. ylang-ylang	♏iv.
Ol. irid. rad.	♏ij.

M.

Glycerine Cold-cream is made in the ordinary way, using instead of water a mixture of glycerine 1 part and water 2 parts.

In regard to the putting up of cold-cream, a word of warning should be given against the custom of covering pots with tinfoil: this is a reprehensible practice, and it is questionable if it has any influence in preserving the cream. The best plan is to fill the pots before the cream has set, and if the preparation is to be subject to great variation of temperature a piece of paraffined paper may be placed between the lid and the pot. Lanoline and vaseline cold-creams, which are not likely to affect metal, may be put up in collapsible metal tubes.

SUMMER SPECIALITIES

Summer is a harvest to many retailers, those in watering places and holiday resorts especially. Apart from increased business in the medicine or dispensing department, it generally affords an opportunity of pushing what are known as 'summer specialities.' We use the term in its restricted sense, for in toilet articles we do not include such things as diarrhœa mixtures or headache salines. The chapter on foot-powders deals with a typical class of preparations wanted chiefly in the summer. The complexion is the main source of revenue, however, and sunburn the trouble which has to be reckoned with. As to prevention of sunburn, it should be noted that no protective of an unguent nature should be applied, as in a scorching sun this is the best thing in the world to ensure blistering. For example, application of vaseline to the face in the morning before going out into the sun is soothing at first, but by-and-by its bad influence begins to tell, and by the time one gets home the blisters are prominent. But if a simple lotion, or nothing at all, be used in the morning the skin merely becomes red by the afternoon, and *then* a liberal application of vaseline is beneficial. Milk of roses, glycerine and cucumber, and similar lotions, are, as a rule, safe protectives. It is well, however, to have a special preparation ready for sale, and this is provided in the following :—

Protective Complexion Balm

Blanched Jordan almonds	℥j.
Tincture of benzoin . .	ʒx.
Orange-flower water .	℥xix.
Rose-water to . . .	℥lx.

Reduce the almonds to fine powder and make into a cream with rose-water; then gradually add the rest of the water, strain, and wash the marc with the orange-flower water. Transfer to a Winchester quart bottle, add the simple tincture of benzoin, and shake.

This should be put up in 6-oz. and 12-oz. white flint bottles, labelled as follows :—

PROTECTIVE
COMPLEXION BALM,
A Delightful Preparation
FOR PREVENTING AND SOOTHING SUNBURN.

Directions.—After washing apply the balm freely to the skin of the face and neck with the corner of a towel, wiping dry in a minute or two. This should be done morning and evening, and during the day if an opportunity permits.

Shake the Bottle.

It is well to remind customers that soaps of the superfatted class are the best to use.

Sunburn Washes are preparations for allaying the intense smarting which follows exposure to sun and wind.

I

Ammon. chlorid.	ʒj.
Cocain. hydrochlor.	gr. xij.
Glycerini	ʒiij.
Spt. rectificat.	℥iij.
Aq. flor. aurant.	℥ij.
Aq. rosæ ad	℥vj.

M.

II

Acid. hydrochlor.	ʒss.
Acid. citric.	ʒij.
Glycerini	℥j.
Ess. rosæ alb.	ʒj.
Spt. rectificat.	℥j.
Aq. destillat. ad	℥viij.

M.

III

Zinci oxidi	℥j.
Boracis	℥ss.
Glycerini	℥ij.
Ext. jasmin.	℥j.
Spt. myrciæ	℥iij.
Aq. destillat. ad	℥xx.

M.

IV

Acid. salicylic.	ʒiij.
Boracis	℥j.
Aq. rosæ	℥xiij.
Aq. flor. aurant.	℥xiij.

Dissolve and filter. To the solution add

Aq. coloniensis	℥ij.
Tr. benzoin.	℥j.

M.

The first of these relieves the irritation marvellously, but its cost is rather against it. Where good prices can be obtained it should be made a leading speciality. The other lotions are excellent general applications which may be more freely used. Such a label as the following is suitable :—

SUNBURN LOTION.

For cooling the skin and relieving irritation following exposure to sun and wind.

Directions.—To be applied with a soft rag to the skin of face and neck a few minutes before washing and immediately after.

Freckle Lotions ought strictly to be classed with the foregoing, because few of them are specifics. The freckle is the result of decomposition of the sebaceous secretion, the colouring matter produced literally staining the cuticle, and it is obvious that the removal of this stain is a great difficulty unless the remedy is applied without delay. Two of the best preparations are :—

Eau des Princesses

Carbonate of potash .	ʒj.
Spirit of camphor . .	℥j.
Tincture of benzoin .	℥j.
Essence of musk . .	♏x.
Distilled water . .	℥vij.
Eau de Cologne to . .	℥xxx.

Dissolve the potash in the water and add to the other ingredients previously mixed. Allow to stand for several days and filter.

Lait Antéphelique

Pulv. camphoræ . .	℈j.
Ammon. chloridi . .	ʒij.
Spt. rosæ . . .	℥ss.
Liq. hydrarg. perchlor. .	℥xv.
Albuminis . . .	℥ij.
Aq. destillat. ad . .	℥xx.

Triturate the powders and add the spirit, then the liquor, and shake until clear. Mix the white of egg with 2 oz. of water in a mortar and slowly add the mercurial solution, making up to a pint with water.

Eau des Princesses is an efficient and safe preparation. It owes its peculiar properties chiefly to the carbonate of potash, which is excellent for removing skin stains. The same is true of corrosive sublimate, which in the form of Lait Antéphelique (with and without albumen) is much used in France. As a matter of fact, the most efficaceous cosmetics are those containing corrosive sublimate. Curiously, ammonium chloride is almost as good, and we commend it to those who for legal or other reasons wish to avoid the scheduled poison.

Rose Freckle Lotion

Zinci sulphocarbol. . .	ʒss.
Glycerini . . .	℥ss.
Spt. rectificat. . .	℥j.
Tr. cocci . . .	ʒss.
Aq. flor. aurantii . .	℥ij.
Aq. rosæ ad . . .	℥viij.

M.

Butter-milk Lotion

Acid. lactic. (10 per cent.)	ʒij.
Glycerini . . .	℥ss.
Ess. rosæ alb. . .	ʒiss
Tr. benzoin. . . .	ʒj.
Aq. ad	℥vj.

Mix the acid and glycerine with the water and add the spirit and tincture previously mixed.

The Rose Lotion is well tried and splendid. Our grandmothers had great faith in butter-milk or sour milk, and some of the fine complexions of days gone by have been attributed to its liberal use as a wash. They seem to have been right, for in these more exact and refined days it has been ascertained that dilute lactic acid has the same effect ; *ergo* the lactic acid in the butter-milk was the thing that made the fine complexions. But we cannot bottle butter-milk as a speciality, and therefore the formula given on page 47 is a substitute which comes as near to it as we can get consistently with stability.

Oriental Extract

Liq. hydrarg. perchlor.	℥ij.
Ammon. chlorid.	ʒj.
Glycerini	ʒij.
Aq. rosæ trip. ad	℥iv.

M.

Freckle Ointments.

I

Bismuth. subnitrat.	℥ss.
Glycerini	℥ss.
Lanolin.	℥iij.
Ol. neroli	♏ij.
Ol. ylang-ylang	♏v.

Mix the lanoline and glycerine, and thoroughly incorporate the bismuth and add the perfumes.

II

Cupri oleat.	ʒj.
Vaselini	℥ij.
Otto rosæ	♏ij.

M.

Freckle Cream.

Quince-seed	℥ss.
Ammonium chloride	℥ss.
Honey-water	℥j.
Hot water to	℥xvj.

Crush the quince-seed and macerate with the hot water for an hour, stirring frequently; then strain through muslin without pressure, and add the chloride of ammonium in powder. When dissolved add the solution to the honey-water slowly and shake well.

The directions for all the freckle lotions may be: 'Sponge the face with tepid water and dry thoroughly. Then apply the lotion with a piece of soft cloth. Do this twice daily.' The oleate of copper ointment should be applied at bedtime only, but the bismuth one is good for daily use, if the user do not go into scorching sunlight.

Two Continental preparations which may be asked for are:—

Eau de Lys de Lohse

Zinc. oxidi	ʒv.
Pulv. cretæ gall.	ʒv.
Glycerini	℥j.
Aq. rosæ ad	℥xl.

M.

Lilionèse

Potass. carbonat.	ʒiiss.
Boracis	℥ss.
Aq. coloniensis	℥iss.
Aq. rosæ ad	℥xxiv.

Dissolve and after two days filter.

There are several varieties of Lilionèse, some of them being excessively alkaline. The one we give is the most useful. It may be made milky by adding tr. benzoin. ʒij. Pulcherine is the same thing without borax and with essence of vanilla and orange-flower water instead of the perfumes given above.

Insect Bites.—Happy the man whom midges trouble not. He is a rare species. But there are none, with white skin at all events, who can come into association with the mosquito and not be aware of the fact. The business end of a wasp, too, is a thing which we all have become acquainted with some time in our lives. Such things bring grist to the mill we are at present working.

Sting Anodyne Fluid

Menthol. . . .	gr. viij.
Spt. rectificat. . .	ʒvj.
Dissolve and add	
Liq. ammon. fort. . .	ʒij.

Put this up in 2-dr. stoppered caustic phials and label appropriately with the direction to 'put a drop of the fluid on the bitten or stung part with the stopper, repeating occasionally if necessary.'

Insect-bite Soother

Acid. carbol. . . .	gr. xv.
Iodi	ʒss.
Potassii iodidi . . .	℈iv.
Aq. destillat. . . .	℥iij.
S.	

This is to be painted upon the part affected, with a camel-hair pencil.

Formic acid is the active principle of the poison of insect bites and stings, and ammonia cures by neutralising it and acting as a counter-irritant. Iodine is merely a counter-irritant. Some people cannot tolerate ammonia, and these are the very ones who are most pained by stings and bites; for such the following is an excellent remedy:—

Cocainæ hydrochlor.	℈j.
Glycerini	ʒss.
Spt. rectificat.	℥ss.
Aq. rosæ ad	℥iv.
S. et M.	

To be painted over the affected part, and repeated every ten minutes until the inflammation subsides.

Preventive Applications owe their efficiency to essential oils. The following are the most useful preparations. These should be applied before leaving the house. The best parts to apply an anti-midge preparation to are the back of the neck and the forehead, so that the insects may smell it much, and their victims little.

Anti-midge

Ol. eucalypti . . .	♏lxxx.
Spt. camphoræ . .	℥j.
Lin. saponis ad . .	℥ij.
M.	

Midge Preventive

Glycerini . . .	ʒj.
Tr. absinthii . . .	ʒiij.
Aq. coloniensis ad . .	℥ij.
M.	

Midge and Mosquito Oil

Ol. pulegii	ʒss.
Ol. eucalypti	ʒss.
Lin. camphoræ	ʒvij.

M.

This may also be made with lin. ammoniæ or lin. camph. co., so as to be a cure and preventive.

Anti-midge Powder

Carmine	gr. j.
Eucalyptus oil	♏xv.
French chalk	℥ij.

M.

For use by ladies as a face-powder.

Mosquito Lotion

Insect powder	℥j.
Acetic ether	℥ss.
Rectified spirit	℥iv.

Macerate three days, filter, and add

Oil of lavender	♏xv.
Rectified spirit to	℥v.

Dilute with an equal volume of water before application. The tincture is also useful for spraying in apartments; for this purpose 1 part may be mixed with 10 parts of water and used in a spray-producer.

Tincture of wormwood is made 1 in 8 with proof spirit. It is excellent for the purpose; insects literally hate it.

SHAVING-PREPARATIONS.

Crème d'Amandes, or almond shaving cream, sometimes referred to as Naples soap, can really be bought better than anyone, except a soap-maker, can make it, and where small quantities are required we recommend that it should not be made. The following formulas fairly illustrate the simplest processes of manufacture:—

I

Lard	℥xj.
Caustic potash	ʒxiij.
Water	℥ivss.

Dissolve the potash in the water and triturate the lard with the solution in a mortar. Allow to stand twelve hours and add

Oil of bitter almonds	♏x.
Rectified spirit	ʒss.

Triturate until the mass becomes pearly in appearance, which can be assisted by the addition of the white of an egg.

II

Curd soap	℥viij.
Spermaceti	℥ij.
Rose-water	Oj.

Simmer together till a jelly is formed, put in a mortar, and add

Isinglass	℥j.

Dissolved in a minimum of water.

Carbonate of potash	ʒj.
White of four eggs.	

Mix and perfume with

Essential oil of almonds	q.s.

Colour if necessary with a few drops of a solution of aniline-violet.

The cream is much improved by the addition of some free fat or lanoline. Curiously, however, a large addition—25 per cent., for example—makes the cream almost worthless, because it does not then lather well. The following are good creams :—

Superfatted

Cold-cream	℥ss.
Almond-cream	℥xiss.
Oil of neroli	♏v.
Eucalyptus oil	♏x.
Rose-water	℥ij.

Put the cold-cream in a warm mortar and mix the almond-cream with it, occasionally adding some rose-water. When thoroughly mixed add the perfumes.

Lanolinated

Lanoline	℥ss.
Almond-cream	℥x.
Rose-water	℥iv.
Coumarin	gr. ij.
Oil of ylang-ylang	♏x.

Mix in a similar manner to the superfatted shaving-cream, triturating off and on for several hours, so as to get a nice appearance.

These creams should be put up in collapsible tubes. They can stand much more water.

The two following formulas show how shaving-pastes can be made in a simple manner and according to the methods of soap-boilers :—

Barber's Cream

Lanolini.	℥ss.
Lin. camphoræ	℥ss.
Saponis mollis	℥xvj.

Put the lanoline and oil into a warm mortar and stir, adding the soft soap little by little and with constant stirring, aiding the mixture with from ½ oz. to 1 oz. of rose-water, then add the following perfume :—

Ol. cinnamomi	♏v.
Ol. bergamot.	♏xv.
Ol. amygdal. essent.	♏viij.

M.

Balsamic Shaving-paste

Beef-suet (rendered)	℥xiiss.
Cocoanut oil	℥vj.
Solution of soda 1·260	℥viiiss.
Solution of potash 1·260	℥x.

Melt the fats on a water-bath, remove, and add the alkali solutions, maintaining the mixture at 50° C. for half an hour, stirring all the time, or until it becomes uniform ; then perfume with the following :—

Oil of peppermint	♏x.
Oil of bergamot	♏xl.
Oil of lavender	♏xv.
Oil of neroli	♏v.

A better balsamic paste is obtained from lard 2 lbs. and potash solution (1·33) 1 lb., heating for several hours at 100° C.

Shaving-creams which are simply to be rubbed upon the skin to assist in shaving and not to lather, are generally sapo-oleaceous emulsions of exceptional thickness ; in short, they are of the 'Euxesis' class. But the following, while satisfactory, do not attempt to imitate that popular preparation in any way :—

I

Cocoa-butter	℥ss.
Almond oil	℥ss.
Glycerine	℥j.
Primrose soap	℥ss.
Otto of rose	♏iv.
Oil of neroli	♏iv.
Oil of bitter almonds	♏v.
Distilled water	q.s.

Melt the cocoa-butter and almond oil and pour into a warm mortar containing the soap previously rubbed down with 3 oz. of boiling water; stir briskly to make a uniform cream, slowly adding 4 oz. of warm water previously mixed with the glycerine; finally the perfumes.

With 4 oz. of rose-water and no glycerine this gives a cream suitable for potting.

II

Pulv. tragacanth.	℥ss.
Spt. rectificat.	℥iv.

Put together in a dry corbyn quart and shake, then add the following in their order :—

Crem. amygdal.	℥j.
Ol. amygdal.	℥ij.
Glycerini	℥v.
Aquæ	℥xlv.

Mix well and perfume with

Ol. ros. geranii	ʒj.
Ol. bergamottæ	ʒij.
Ol. neroli	ʒss.
Ol. citronellæ	♏xx.
Spt. rectificat.	℥j.

M.

Shaving-powder

Powdered soap	℥xxx.
Powdered spermaceti	℥ss.
Coumarin	gr. iij.
Oil of bergamot	♏x.
Oil of wintergreen	♏iij.

Mix well.

May be made antiseptic by the addition of benzoic acid (1 per cent.) or salol (5 per cent.). The powder is sprinkled upon the wet shaving-brush.

Menthol After-shave

(*A Cooling Application*)

Menthol	gr. v.
Powdered tragacanth	ʒss.
Rectified spirit	℥ss.
Glycerine	ʒij.
Water to	℥vj.

Dissolve the menthol in the spirit and add to the tragacanth contained in a dry bottle; add the water, shake; add the glycerine, again shake.

We do not fancy the above mentholated tragacanth mucilage as an application to the cheeks. The best after-shave is bay rum. English barbers have never got into the way of using this liberally, because the price of it does not fit in well with the usual charge for shaving. It is cnly in the United States, where sixpenny and shilling shaves are the rule, that barbers can afford to soak a large pait of a towel with bay rum, and pat it round the cheeks. The effect is delicious, and is not approached by a spray.

Razor Pastes must be made with the finest powders possible; they should be properly elutriated.

Black

Blacklead . . .	℥ij.
Mutton-suet . . .	℥iij.
Oil of bitter almonds .	♏ij.

Mix.

May also be made with equal parts of levigated emery and blacklead.

Red

Levigated rouge or ferric oxide	℥ij.
Putty-powder . . .	℥ss.
Mutton-suet . . .	℥iij.
Oil of peppermint . .	♏ij.

Mix.

AROMATIC AND TOILET VINEGARS

It is said that fans and flirtation go together. Once upon a time the vinaigrette played as important a part as the fan, and there was as much art in using the former as there was, is, or ever will be in using the latter. The good old fashion seems destined to extinction, and few there are who use the dainty stimulators for other than a purely conventional purpose. Nevertheless we should be too bold to oust the decaying fashion by refusing to quote formulas for aromatic vinegar. There is a clear distinction between it and toilet-vinegar, the purposes of which are fully delineated in the label afterwards given.

Acetum Aromaticum, or Aromatic Vinegar

I

Oil of cloves . . .	ʒj.
Oil of lavender . .	♏xl.
Oil of lemon . . .	♏xl.
Oil of bergamot . .	♏xx.
Oil of cinnamon . .	♏x.
Oil of neroli . . .	♏iv.
Glacial acetic acid . .	℥j.

Mix.

II

Ol. bergamot. . .	ʒj.
Otto rosæ . . .	ʒss.
Ol. caryophylli . .	♏xv.
Ol. neroli . . .	♏viij.
Ol. lavandulæ . .	♏xv.
Acid. acet. glacial. . .	℥v.

M. et S.

Toilet Vinegar.—The label for this preparation should set forth its virtues somewhat in the following manner:—

On account of its antiseptic properties Toilet Vinegar is very useful in preventing the spread of the contagion of fevers, measles, whooping-cough, &c. It is an elegant, cooling, and refreshing compound, a delightfully fragrant and antiseptic preparation for use in the sick-room. A little sprinkled about the carpet or on pads hung about the room will effectually disinfect the apartment and remove foul or unpleasant odours and purify the air from microbes of any description. A few drops sprinkled on the person before visiting the sick or infected places will prevent contagion. Invalids will find a little mixed with the water for washing or the bath most comforting and refreshing; and a few drops on the handkerchief inhaled or applied to the forehead is good to prevent fatigue and headache. Can be used with advantage in all the toilet operations of the sick-chamber.

I

Æther. acetic.	ʒij.
Acid. acetic. glacial.	℥iij. ʒvj.
Tr. eucalypti glob.	℥j. ʒvj.
Aq. coloniensis	℥xxx.

M.

The Eau de Cologne for this is made according to the following recipe:—

Ol. neroli	ʒvj.
Ol. rosmarini	ʒvj.
Ol. aurant. amar.	ʒxj.
Ol. limonis	ʒxj.
Ol. bergamot.	ʒxj.
Aq. flor. aurant. trip.	℥x.
Spt. rectificat.	Cong.j.

M.

II

Mixed oils for eau de Cologne	ʒiij.
Thymol	gr. v.
Glacial acetic acid	℥iiss.

Dissolve and add

Water to	℥xv.

Mix with fullers' earth ½ oz., agitate occasionally for a day or two, and filter.

III

Balsam. peruv.	ʒiiiss.
Spt. vin. rect.	℥xx.

Digest four days with occasional agitation, then add

Acid. acetic. glacial.	℥iv.
Æther. acetic.	ʒij.
Aquæ rosæ trip.	℥j.

Digest two days longer and filter, using powdered pumice-stone if necessary. To the filtrate add

Ol. eucalypti	ʒj.
Ol. limonis	♏xx.
Ess. vanillæ	ʒj.
Ol. rosæ virgin.	♏x.
Ol. cinnam.	♏xv.
Ol. menth. pip. ang.	♏iij.
Spt. vin. rect. ad	℥xl.

M.

IV

Acid. acetic.	℥viij.
Ol. rosmarini	ʒj.
Ol. caryophylli	ʒj.
Ol. lavandulæ	ʒij.
Ol. geranii	ʒj.
Camphor.	℥j.
Tr. iridis	℥v.
Ess. vanillæ	ʒij.
Spt. rectificat. ad	Oiij.

M.

The best toilet vinegar is made by distillation from a vinegar of herbs and flowers, and is free from alcohol, which slowly gives rise to an acetic-ether odour objected to by some. No. II. provides a vinegar free from this objection.

SMELLING-SALTS

From the modest penny pungent to the magnificent cut-glass vase of lavender salts there is a long step; some good business, and much art. A man may be able to dispense an intricate prescription accurately, and yet be a poor hand at filling a smelling-bottle. We are speaking now of those which are not of the lavender-salts type; and before referring to materials, we may call attention to the importance of stocking only the best styles of bottles. A good, white-glass, neatly cut, large-mouthed 'Preston' is worth double the price of a narrow-necked, fanciful-shaped bottle which may have cost more; and customers soon get to know this. See that the bottles have perfectly fitting stoppers. If bottles with imperfect stoppers be used they only bring discredit on the contents and the filler. The secret of inexhaustible salts is in the stopper, not in the salts. One essence will keep its pungency as long as another provided the stopper be right. There are plenty of good bottles to be had, but there are more bad ones. It takes some experience to know a good one from a bad, but attention soon generates the requisite detective acumen.

At the present time, when ammon. carb. in cubes, balls, &c., has brought in new styles and methods, the old-fashioned way of filling a 'Preston' is likely to be forgotten, so we describe it.

The necessary materials for filling are few and simple. Sponge, carbonate of ammonia in rough powder, aromatic ammoniacal essence, and a piece of wire about six inches long, and just thick enough not to bend easily, having one end flat and the other sharpened and turned up for hooking out pieces of sponge from bottles that require to be emptied—these are all that are ordinarily necessary. The sponge should be well cleaned, dry, and cut into pieces uniform in size and colour. It spoils the appearance of a filling to have a piece of brown sponge where the bulk is white, or *vice versa*. The carbonate of ammonia should not be too finely powdered, but neither should it contain large pieces. A light shake on a sieve to take out the finest of the powder is all that is necessary to provide this chemical in suitable condition. The principal points to be considered in selecting an essence are to have one which gives pungency, and which does not become very brown.

When sponge is used for charging fill the bottle two-thirds full of the essence previously well shaken, and put in sponge till every corner of the bottle is filled. If the sponge be judiciously manipulated it can be made to fill the bottle thoroughly without necessity for packing. An expert can get in more essence than the quantity specified, but this quantity will make the 'bottle' strong enough for most people, and there is no fear of it running out. When salts are wanted, if the bottle hold, say, 2 dr. of the rough powder, about a third of the powder should be put in and gently pressed down and three drops of the essence added, then the other two-thirds added in the same way; but with the last five drops of essence may be added instead of three.

These are the chief points to note in filling. We do not desire to underrate the importance of a good essence, and we append a selection of formulas, all of which have been or are used by leading chemists.

Volatile Essences

I

Camphor. . . .	ʒss.
Ess. moschi . . .	℥ss.
Ol. limonis . . .	♏xxx.
Ol. lavand. ang. . .	ʒj.
Ol. bergamot. . . .	ʒiij.
Ol. caryoph. . . .	♏xx.
Liq. ammon. fort. . .	℥viij.

M.

II

Ol. lavandulæ. . .	ʒj.
Ol. rosmarini . . .	ʒj.
Ol. bergamottæ . .	ʒj.
Ol. caryophylli . .	ʒss.
Ol. cinnamomi . .	ʒss.
Liq. ammon. fort. . .	℥xij.

M.

III

Ol. lavand. ang. . .	ʒj.
Ol. bergam. . . .	♏xl.
Ol. rosmar. . . .	♏xv.
Liq. ammon. fort. . .	℥iij.

M.

IV

Ol. rosæ virgin. . .	ʒij.
Ol. lavand. ang. . .	℥iss.
Ol. bergamot. . .	℥iss.
Ol. cinnamom. ver. .	℥ss.
Ol. caryoph. . . .	℥ss.
Ess. moschi . . .	℥j.
Spt. rect. . . .	℥iv.
Liq. ammon. alcoholic. .	℥x.

M.

The fourth formula is one of which Queen Victoria's mother was very fond, and smelling-salts made with it were at one time as popular as lavender salts are now. The late Mr. Allchin strongly advocated the use of Monocarbonate of Ammonia for filling the bottles, and made it a speciality after publishing his process, which is as follows :—

Take carbonate of ammonia 4 oz., break into small pieces, place in a jar, and pour over it liq. ammon. fort. 2 oz. Stir every day until the monocarbonate has become hard enough to powder. This is not an easy thing to do, but if daily attention be given to the mixture it turns out all right. Keep in well-stoppered bottles. Perfume with a mixture of

Oil of lavender	ʒiv.
Essence of musk	ʒiv.
Oil of bergamot	ʒij.
Oil of cloves	ʒj.
Oil of cinnamon	gtt. v.
Otto of rose	gtt. x.

Another process for making Inexhaustible Salts is to mix ammonium chloride and potassium carbonate together, when the volatile carbonate is slowly generated. Such salts are very lasting. The following are the best formulas of this type :

I

Ammonii chloridi	℥viij.
Potassii carbonatis	℥iij.
Camphoræ	℈ij.
M. et adde	
Liq. ammon. fort.	℥ss.
Spt. rectificat.	℥ss.
Ol. caryophylli	♏xx.
Ol. rosmarini	♏xx.
Ol. cassiæ	♏x.
Ol. limonis	ʒss.
Ol. bergamottæ	♏xx.
Moschi	gr. j.

Pack into bottles as above directed.

II

Ammonium chloride	℥iss.
Potassium carbonate	℥j. ʒvj.
Camphor	ʒj.
Ammonium carbonate	ʒiij.
Oil of cloves	♏x.
Oil of bergamot	♏x.
Oil of spearmint	♏iv.

Powder the solids and mix with the oils.

Lavender Salts.—The simplest way to make these is to fill the bottle with clear pieces of carbonate of ammonia and add a sufficiency of a solution of ʒij. oil of lavender in alcoholic ammonia ℥iv. If alcoholic ammonia is not available use liq. ammon. fort., 0·880, 1 part, and S.V.R., 3 parts.

The carbonate of ammonia should be carefully selected. The 'Volcanic' variety was the best, but that is no longer made. Specially compressed cubes are now obtainable. The globular form of filling is sal prunella. Opal glass balls serve just as well. There is no reason why the lavender perfume should be strictly adhered to; any of the essences given above do as well if alcoholic solution of ammonia is used to make them. The essence must be strongly alcoholic, otherwise it dissolves the carbonate and makes the bottle messy. A little rose or neroli may be added to the lavender to round it off a little, and the solution may be tinted with a mixture of phenylene and methyl blues (violet), cudbear tincture (red-blue), eosin-yellow (yellow), and safranine (pink); and green may be obtained with the blues and eosin-yellow.

Anticatarrhal Salts have become a regular article of retail since the introduction of Alkaram, and the first formula given below affords a similar preparation. The others are approved, and are regular stock articles.

I

Camphor. . . .	ʒj.
Ammon. carb. . .	℥iss.
Pulv. carbon. ligni . .	℥j.
Acid. carbolic. . .	♏xl.
Ol. santali . . .	ʒj.
Ol. origani . . .	ʒj.
Liq. ammon. fort. . .	♏xx.

Mix the powders and add the mixed liquids.

II

Ammon. carb. contus. .	℥ss.
Pulv. carbon ligni . .	gr. xv.
Pinol.	♏iij.
Liq. ammon. 0·880 .	♏x.

M.

III. **Martindale's**

Absolute phenol . .	24 parts
Carbonate of ammonia .	16 parts
Strong solution of ammonia . . .	44 parts
Oil of lavender . .	1½ part
Camphor . . .	3 parts
Pine sawdust . . .	q.s.

Mix.

IV

Ammon. chlorid. . .	℥ij.
Potass. carbonat. . .	℥iss.
Iodi	ʒij.
Acid. carbolici . .	℥ss.
Ol. eucalypti . . .	ʒj.

M.

The ingredients should be rubbed together in a mortar, and filled into the bottles just tightly enough to prevent falling out should a bottle be upset. Very tight packing is objectionable. Salts of this description should not be very strong with ammonia, the object being to let them be freely inhaled. The first is, on the whole, the best basis, and with the addition of lin. iodi ʒj. it affords a most beneficial anticatarrhal bottle.

The perfume may be modified, eucalyptus oil being the favourite. No. IV. should have the oil added to the bottles.

Miscellaneous Toilet Preparations

Bath-tablets

Carbonate of soda	℥iv.
Tartaric acid	℥iss.
Orris-root	℥ss.
Oil of lemon	ʒss.
Oil of orris (or ionone)	♏v.
Oil of ylang-ylang	♏v.

Mix the oils with the orris-root, add the other ingredients, and make into a stiff paste with spirit. Divide into suitable-sized tablets and dry.

These are similar to Pasta Mack. Use concentrated crystal soda.

Bath-powder

Borax	℥iv.
Oil of lavender	♏x.
Cassie extrait	ʒj.
Jasmine extrait	ʒj.

Mix.

Use a heaped teaspoonful for the bath, and as much as will lie on a sixpence for a basin.

Crystal carbonate of soda (Crescent brand) is now generally used. To colour and perfume, dissolve aniline violet 2 gr. and ionone ½ dr. in 1 oz. spirit, spray over 2 lbs. of crystals, and keep to mix with the bulk.

Toilet Oatmeal

I

(Violet-scented)

Powdered orris	℥j.
Ionone	♏x.

Triturate for five minutes, then add

Oatmeal (medium, and sifted free from flour)	℥xij.

Mix.

This is for assisting in washing the hands, oatmeal having a delightfully emollient and cleansing effect.

II

Powdered orris	℥j.
Oil of neroli	♏ij.
Oil of bergamot	♏v.

Triturate well and add

Finely sifted oat-flour	℥viij.

Mix and sift three times.

This is a dusting-powder.

Water-softener

Slaked lime	℥j.
Dried carbonate of soda	℥ij.

Reduce both to fine powder and mix.

'Anti-calcaire' contains alum, lime, and sodium carbonate. It is patented.

Toilet Ammonia

For bath, toilet, &c.

Liq. ammon. fort.	℥vj.
Aq. lavand.	ʒj.
Sapon. commun. dur.	℈ss.
Aq. destill. ad	℥xvj.

M.S.A.

Brush-powder

Carbonate of soda and soap, dried and powdered, of each equal parts. Add 2 drops of oil of citronella to each pound.

Sponge-powder

Dried carbonate of soda	℥xvj.
Metasulphite of sodium	℥ss.

Mix.

A teaspoonful to a quart of hot water.

Prepared Fullers' Earth

A good quality of well-calcined earth is digested for a day in hydrochloric acid (1 in 2), washed thoroughly with water, dried, and sifted. It is then mixed with half its weight of French chalk.

White Fullers' Earth is finely sifted kaolin.

Paint for Black Eyes

Bismuth subcarbonate	ʒij.
French chalk	ʒj.

Mix and colour with carmine, Armenian bole, or calamine to skin tint. Apply after washing the parts with a mixture of

Glycerine	ʒj.
Water	ʒv.

For Eye-bruises

Raw beef and fresh Solomon's seal are said to be satisfactory remedies, and a strong infusion of *Capsicum annuum* also has its supporters. When the skin is not broken dilute lead lotion with a little tr. arnicæ (ʒj. in ℥j.) often acts like magic.

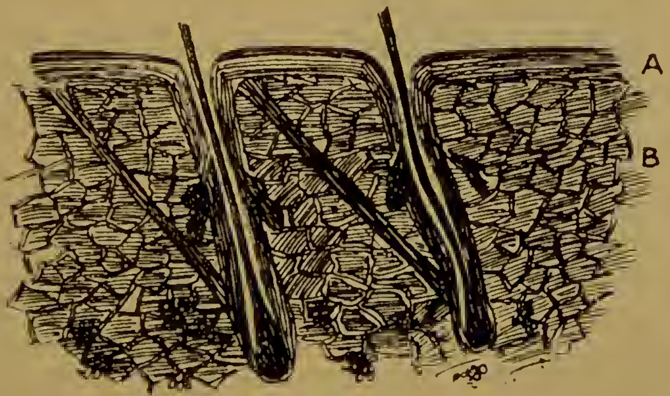
Lotion for the Eyebrows

Common salt	ʒj.
Chloride of ammonium	gr. x.
Camphor	gr. v.
Oil of rosemary	♏v.
Rectified spirit	℥ss.
Water to	℥viij.

Dissolve the camphor and oil in the spirit and add to the water containing the salts.

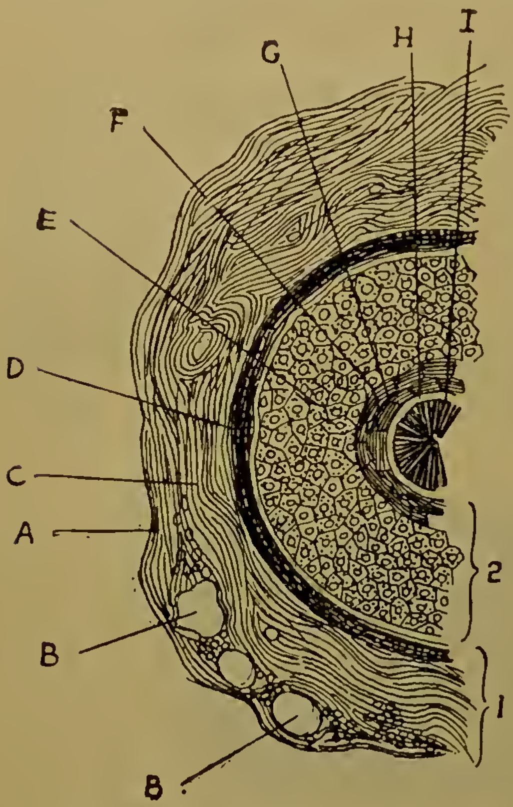
PREPARATIONS FOR THE HAIR

THOSE who manufacture preparations for the hair are, more often than not, ignorant of the structure and physiology of the hair, and it may therefore be advantageous to preface this selection of formulas with a general statement upon structure and functions. The hair is a solid fibre springing from a depression in the skin which forms the root-sheath, or follicle; and, as if to show the importance of a healthy head of hair, Nature has provided this sheath with an exceptional supply of capillary blood-vessels and fat-glands to ensure ample nourishment and flexibility. There are some 100,000 of these skin depressions in the head on the average, and, if the conditions are normal, as many hairs to fill them. The 'root' of the hair is a small, elongated bulb, not unlike the end of an Indian club. This root is not separate from the sheath, for the cellular growth is continuous, and if the hair be forcibly pulled it will either snap off above the skin or will come out by the 'root,' part of the sheath coming with it. It is at the bottom or 'root' of the



SECTION OF THE SKIN OF THE HEAD, WITH TWO HAIR FOLLICLES (slightly magnified). A, Epidermis; B, Corium.

hair that growth takes place; as a matter of fact the 'root' is ever changing, so that the 'root' part to-day is part of the shaft to-morrow. The root and shaft are therefore essentially the same in structure, and consist of a central portion called the medulla, or pith, and the cortical portion; but in some hairs it is not possible to distinguish the two parts. The development of the hair *ab initio* commences at the bottom of the follicle and by the aggregation of successive cytoblasts, or new cells the hair is gradually protruded from the follicle, both by the elongation of its constituent cells and by the addition of new layers to its base, the apex and shaft being formed before the bulb. The cells are round and loose at the base of the hair, but are more compressed and elongated in the shaft, whereby the hair appears to have a fibrous appearance. The cortical portion consists of epithelial cells laid on like tiles on a roof, so that when viewed by a high magnifying power the edge of the hair appears to be serrated. The colour of the hair is due to pigment which resides in the cortical portion chiefly, but also in the medulla, to both of which it is supplied by the bulb, and like all other bodily functions this one of the hair-bulb may be atrophied, with the result that the hair loses its colour. Great nervous excitement predisposes to atrophy; so nervous stimulus, as by the use of pilocarpine, may restore the colour of hair.



SECTION OF HAIR FOLLICLE.

1, Dermic coat of follicle; 2, Epidermic coat, or root-sheath. A, Outer layer of dermic coat, with blood-vessels B B; C, Middle layer; D Inner or hyaline layer; E, Outer root-sheath; F, G, Inner root-sheath; H, Cuticle of root-sheath; I, Hair.

The hair is supplied with fat-glands, the contents of which are by osmotic action carried right up the shaft of the hair, thus keeping it flexible and shiny. But this cannot be carried on indefinitely. Professor Shoemaker most appropriately says: 'A hair, exhausted as to the vitality of its root, perhaps from a root being called upon to maintain a stem too long for its capacity to nourish, slips from its follicle,' because the root shrivels, and leaves the papilla to reproduce another hair, as it will do unless it is a case of incipient baldness. It is universal in nature that a stimulus from without may invigorate activity within, and it is upon that ground that the collection of formulas in this chapter has become possible; but it is necessary that those who compound and retail these preparations should appreciate the fact that the hair to which they are applied is a part of the living body, and that their possibilities are limited by the natural functions.

HAIR-DRESSINGS.

Stock Pomade

Lard	lb. iv.
Yellow wax	℥iij.
Palm oil	℥j.
Water	℥v.
Oil of bergamot	℥j.
Oil of lemon	℥ss.
Oil of cloves	ʒij.

Melt the lard, wax, and palm oil and strain, stir occasionally, and add the water in the manner of making cold-cream. When nearly cold add the perfumes.

Benzoated

Benzoated lard	lb. ij.
Oil of jasmine	ʒiiss.
Otto of rose	♏v.
Oil of orris	♏j.
Coumarin	gr. j.
Alkannin	gr. viij.

This is the better for the addition of 2 oz. Japan wax, which should be melted with 6 oz. of the benzoated lard in a large pot, and the rest of the lard added bit by bit without increasing the heat much. Then remove, add the perfumes, and stir till half-hard.

Snow-white Pomade

To make a cheap snow-white pomade omit the colouring-matters from the last two formulas, and to each pound add

Curd soap	℥ss.
Borax	gr. v.
Water	℥vj.

Dissolve by the aid of heat. Beat up this solution thoroughly with the pomade before it cools.

Household Pomade

Vaseline oil	℥xxiv.
White ceresine	℥viij.

Melt together, allow to cool slowly, stirring the while; then add

Oil of bergamot	♏lxxx.
Oil of bitter almonds	♏xxx.
Oil of lemon	♏xv.
Oil of cloves	♏xv.

Mix well.

Cantharidine Pomade

I

Benzoated lard	℥viij.
Vaseline	℥viij.
Yellow wax	℥j.
Peruvian balsam	℥ss.

Digest on a water-bath for ten minutes, strain, and stir constantly until of a creamy consistency; then add

Cantharidin, in fine powder	gr. j.
Acetic ether	ʒiij.
Otto of rose	♏viij.
Oil of bergamot	ʒss.

Dissolve the cantharidin in the ether. Mix well.

Instead of cantharidin, pulv. cantharid. ʒij. may be used. Heat it with the fats for half an hour and omit the acetic ether.

II

Ol. olivæ	℥viij.
Adipis	℥vij.
Ceræ flavæ	℥j.
Ol. bergamot.	ʒiij.
Ol. caryoph.	♏xl.
Ol. lavand. ang.	♏xl.
Ol. amygd. essent.	ʒss.
Acet. cantharid.	℥iv.
Pulv. cambogiæ	ʒss.

Melt the first three ingredients on a water-bath. In this melted mixture digest the gamboge, and strain. When creamy, add the vinegar, stirring constantly to mix, and finally the perfumes.

Castor-oil Pomades

I

Italian castor oil	℥xvj.
Olive oil	℥xij.
Jasmine pomade	℥xx.
Violet pomade	℥xx.

Melt the pomades with a gentle heat and stir in the oils.

The floral pomades are to be used. The product is exceptionally fine; but if considered too soft, add to it 2 oz. of picked yellow wax.

II

Castor oil	℥xvj.
White wax	℥iv.

Melt, stir, and add

Oil of bergamot	ʒiiss.
Mitcham oil of lavender	ʒss.

Stir well until set.

III

Castor oil	℥viij.
Vaseline	℥ij.
Yellow wax	℥iss.

Melt altogether, stir constantly as it cools, and when creamy add perfume.

IV. Transparent

Cetacei	℥ij.
Ol. ricini ital.	℥v.

Melt and add gradually with constant stirring

Spt. vin. rect.	℥v.

Then add

Ol. bergamot.	♏xxx.
Ol. neroli	♏iv.
Ol. caryoph.	♏iv.
Ol. verbenæ	♏iv.
Ol. rosæ	♏iv.

Mix and fill into bottles previously warmed.

It is not, of course, necessary to call these castor-oil pomades. They may carry any fanciful name.

Circassian Cream

Benzoated lard	℥xvj.
Prepared lard	℥xvj.
Yellow wax	℥iij.
Almond oil	Oj.
Rose pomade	℥vj.
Otto of rose	ʒj.
Alkannin	gr. j.

Melt the wax and the lards, dissolve the alkannin in the oil, and add to the hot mixture; stir until dissolved, then add the rose pomade and the otto, again stir, and bottle

Cocoa-oil Pomade

I

Take any convenient quantity of cocoanut oil—say, 1 lb.—and melt by the heat of a water-bath. Strain and stir well, so that the fat may set in minute granules. While cooling, add

Oil of pimento	♏x.
Oil of cloves	♏x.
Oil of bergamot	ʒss.
Oil of mace	ʒss.

Mix.

This keeps nicely, and sells more profitably than plain cocoa-nut oil.

II

Cocoa butter	℥vj.
Castor oil	℥xxxij.

Melt and add

Oil of rose-geranium	ʒj.
Oil of orange	ʒiss.
Tincture of turmeric	ʒij.

Stir constantly until cold.

Nut oil may be used in place of castor oil, but in the proportion of 4 to 1 of the cocoa butter.

Crystallised Pomade.—In order to obtain a pomade with the appearance of large crystals it is necessary that it should cool very slowly. The pomade bottles previous to filling should be placed up to the necks in a basin of warm water, then filled, and allowed to remain until thoroughly set. Second in importance is the necessity of entire absence of solid fats, such as palm oil, lard, &c., if the pomades are to be free from opacity. If it is desired to have the pomade of a golden colour, the almond oil (or any other oil used) should be coloured with gamboge, or any of the golden colourings advertised, such as Allchin's.

I

Ol. ricini	℥viij.
Ol. amygdal. dulc.	℥viij.
Cetacei	℥ij.
Ol. bergamot.	ʒij.
Ol. lavand. ang.	ʒiss.
Ol. jasmin.	gtt. viij.
Ol. violæ	gtt. viij.
Ol. rosæ virgin.	gtt. viij.

Melt the spermaceti and add the fixed oils, warming gently only. Add the perfumes. Place the bottles for the pomade in a shallow dish containing warm water. Fill the bottles with the pomade and allow to stand until cold without disturbing them in any way.

This formula is rather strong in perfume. We have found a fourth of the bergamot and half the lavender to be sufficient.

II

Almond oil	℥xxiv.
Castor oil	℥viij.
Spermaceti	℥iv.

Melt and add

Oil of verbena	ʒss.
Oil of cassia	ʒss.
Oil of bergamot	ʒj.
Oil of cloves	♏x.
Otto of rose	♏ij.

Stir well, pour into bottles, and cover.

III

Castor oil	℥iv.
Olive oil	℥iv.
Spermaceti	ʒvj.
Oil of neroli	♏iv.
Oil of lemon	♏viij.

Proceed as in the above. (Requires 1 oz. spermaceti in summer.)

IV

Castor oil	℥xvj.
Olive oil	℥xij.
Spermaceti	℥iiiss.
Oil of jasmine	ʒv.
Otto of rose	♏viij.
Oil of bergamot	♏viij.
Oil of neroli	♏iv.
Oil of rose-geranium	♏ij.
Oil of orris	♏j.
Coumarin	gr. j.
Heliotropin	gr. iij.

V

Olive oil	℥xxv.
Palm oil	℥ij.
Spermaceti	℥v.
Oil of bergamot	ʒss.
Oil of neroli	ʒss.
Oil of cloves	ʒij.
Oil of lemon	ʒss.

Prepare Nos. II. to V. in the manner described.

Crystallised Lime Cream

Castor oil	℥xvj.
Pale almond oil	℥viij.
Spermaceti	℥iij.
Oil of lemon	ʒij.

Proceed as in the foregoing. Bleached almond oil is apt to be rancid, but is necessary for this pomade because it must be quite white.

Dupuytren's Pomade

Marrow	℥x.
Olive oil	℥vj.
Peruvian balsam	℥j.
Acetate of lead	ʒij.
Tincture of cantharidis	℥ij.
Oil of bergamot	℥j.
Oil of cloves	ʒi.

Make a pomade.

The first of the following formulas for dandruff pomade is based on the prescription of Mr. James Startin, M.R.C.S The original preparation was somewhat thin, from being made with camphorated oil; but as modified the preparation is of nice consistency, has a taking appearance, and is an effectual remedy for dandruff as well as a good hair-dressing.

Dandruff Pomade

I

Hydrarg. oxid. flav.	gr. x.
Hydrarg. ammoniat.	gr. iv.
Ung. camphoræ	℥ss.
Ung. simplicis	℥iss.
Ol. neroli	♏iij.
Otto rosæ	♏ij.

Melt the ointments on a water-bath; rub the powders with a little of the mixture on a slab, and add to the rest when it begins to be creamy; also the perfumes. Mix and bottle.

Ung. Camphor. for this is made by dissolving 1 oz. of camphor in 5 oz. of melted lard.

II

Salicylic acid	ʒss.
Borax	gr. xv.
Peruvian balsam	ʒss.
Vaseline	℥j.
Oil of cinnamon	♏iij.
Oil of bergamot	♏x.

Mix well in the cold.

See the section on Dandruff, page 87.

Lanoline Pomade

I

Anhydrous lanoline	℥xvj.
Almond oil	℥ij.

Melt together and add

Tincture of benzoin (1 in 5)	℥j.
Perfume	a sufficiency

Stir and bottle.

II

Anhydrous lanoline	℥ij.
Vaseline oil	ʒx.
Ceresine	gr. lxxv.
Distilled water	℥j.

Melt the ceresine in the oil by the heat of a water-bath, add the lanoline, and mix the water intimately with the whole. Perfume.

Macassar Pomade

Castor oil	℥x.
Suet	℥ij.
Spermaceti	℥j.
Oil of nutmeg	ʒss.
Oil of sweet marjoram	ʒss.
Oil of rosemary	ʒss.
Otto of rose	♏xv.
Oil of rose-geranium	♏x.
Alkanet-root	sufficient to colour

Melt the spermaceti and suet, adding the castor oil (previously coloured by digesting with alkanet), and, lastly, add, when nearly cold, the perfumes, which in this case are also the medicaments.

Marrow Pomade

I

Beef marrow	℥xvj.
Beef suet	℥viij.
Palm oil	℥viij.

Heat them together on a water-bath for half an hour, then strain with pressure and perfume suitably.

II

Prepared lard	lb. iv.
Prepared suet	lb. ij.
Oil of lemon	℥j.
Oil of bergamot	℥ss.
Oil of cloves	ʒiij.

Melt the fats and add the perfumes.

III

Beef marrow, lard, castor oil, and olive oil, of each	℥vj.
Powdered gamboge	ʒiss.
Perfume	q.s.

Proceed as in No. I. Needs yellow wax 2 oz.

IV

Almond oil	℥xvj.
Marrow	℥x.
Jasmin pomade	℥ij.
Rose pomade	℥ij.
Orange pomade	℥ij.
Oil of lemon	ʒij.

Prepare as No. II. with wax 3 oz.

Children's Pomade

(Parasitic or Nit Ointment)

No. II. Dandruff Pomade has been recommended for destroying nits, but has little influence. The following is better:—

Yellow wax	ʒix.
Lard	℥vj.
Olive oil	℥vj.

Melt and to the mixture add

Veratrine	gr. x.
Oleic acid	ʒss.

Previously rubbed together in a mortar. Stir well and perfume with

Oil of lemon	ʒj.
Oil of bergamot	ʒj.
Oil of verbena	♏v.

Mix.

By omitting the veratrine and acid, and using oil of stavesacre instead of olive oil, a non-poisonous pomade is obtained.

Nutritive Cream

Pomat. jasmin.	℥ss.
Pomat. rosæ	℥ss.
Pomat. aurantii	℥ss.
Ol. olivæ	℥ij.
Ol. ricini	ʒij.
Adipis	℥iij.
Cetacei	℥j.
Pulv. cambogiæ	ʒj.
Ol. bergamot.	ʒj.

Melt the lard and spermaceti on a water-bath and digest the gamboge in the mixture; then add the olive and castor oils, strain, and add the floral pomades and the bergamot. Stir now and then till creamy.

Petroleum Pomade

Heavy petroleum oil .	℥ix.
Ceresine	℥j.

Melt together, stir constantly till cream-like, add perfume, and continue to stir until it sets.

This makes a capital pomade when nicely perfumed, and much nicer and less costly than mixtures of animal and vegetable fats.

Regenerative Pomade

Ol. olivæ . . .	℥xxiv.
Ceræ albæ . . .	℥iij.
Ol. palmæ . . .	℥iij.
Pomat. rosæ . . .	℥vj.
Pomat. jasmin. . .	℥ij.
Pomat. aurantii . .	℥j.

M.S.A.

Restorative Cream

Ceræ albæ . . .	℥v.
Ol. amygdal. dulc. . .	℥xxvij.

Melt, and add when nearly cold

Ol. jasmin. . . .	℥iv.
Otto rosæ . . .	♏xx.
Ol. geranii . . .	♏x.

M.

An expensive but excellent pomade.

Pomade Philocome.

A mixture of 1 part of white wax and 9 parts of olive oil, perfumed.

Rose Pomade

Lard	lb. iij.
Spermaceti . . .	℥iij.
Almond oil . . .	℥iij.
Alkanet	℥ss.

Heat on a water-bath half an hour, first melting the spermaceti with the almond oil; then strain and add

Otto of rose . . .	ʒss.
Oil of rose-geranium .	ʒss.
Oil of bitter almonds .	♏x.

Stir until it begins to set.

Strawberry Pomade

Cocoanut oil . . .	℥xviij.
Almond oil . . .	℥ix.
White wax . . .	℥iij.
Fresh strawberries . .	℥iv.
Alkanet	ʒij.
Otto of rose . . .	♏x.

Melt the first three ingredients on a water-bath and digest the strawberries and alkanet in the mixture for an hour; then drive off the remaining moisture at a temperature of 212° F.; strain, stir, and perfume.

Vaseline Pomades.—The basis consists of 6 to 8 parts of white vaseline (or more according to season) and 1 part of ceresine melted together, and while melting coloured with the substances undernoted according to the floral odour desired. The quantities of perfumes here given are for not less than 2 lbs. of the basis :—

Citron

Oil of lemon . . .	ʒiiss.
Oil of bergamot . .	ʒss.
Oil of lemongrass . .	ʒss.

Colour—Tincture of gamboge.

Heliotrope

Oil of cassie . . .	ʒij.
Oil of bitter almonds .	♏xl.
Oil of cinnamon . .	ʒss.
Peruvian balsam . .	ʒij.

Orange

Oil of orange-peel . .	ʒiiss.
Oil of bergamot . .	ʒss.
Oil of rose-geranium .	ʒss.

Colour – Oil-soluble orange aniline, or oleaceous butter-colouring.

Reseda

Oil of bergamot . .	ʒij.
Oil of bitter almonds .	ʒiss.
Oil of neroli . . .	ʒj.
Oil of ylang-ylang . .	♏xv.

Colour – Chlorophyll.

Rose

Oil of rose-geranium .	℥ss.
Oil of bergamot . .	ʒiss.
Oil of neroli . . .	ʒss.

Colour – Alkanet.

Virginia Pomade

White vaseline . .	℥xiiss.
White wax . . .	℥j.
Powdered benzoin . .	℥j.
Peruvian balsam . .	ʒij.

Digest on a water-bath for a few hours, then strain, and add bergamot oil ʒj, and otto of rose ♏x.

Walnut Pomade

Extract of walnut-leaves .	℥iij.
Benzoated lard . .	℥v.
Perfume . . .	a sufficiency

Mix.

NOTE.—Ext. jugland. fol. is a proof-spirit extract of walnut-leaves ext. jugland. nue. a boiling-water extract of the unripe shells. Either may be used.

High-class Floral Pomades.—These, it will be seen, are compounds of the floral pomades made at Grasse. For odour they are the finest possible preparations, but in price are only suited for high-class trade. Cheaper preparations may be made with the fatty residue left after making spirit-perfumes from floral pomades; in fact, these residues should always be utilised in this way.

Heliotrope

Vanilla pomade . .	lb. iij.
Rose pomade . . .	lb. j.
Jasmine pomade . .	lb. ij.
Tuberose pomade . .	lb. j.
Essence of vanilla . .	℥j.
Essence of ambergris .	ʒj.
Essence of musk . .	ʒss.
Oil of cloves . . .	ʒj.

Melt the pomades and add the perfumes, stirring occasionally until cold.

Hyacinth

Tuberose pomade . .	lb. ij.
Orange-flower pomade .	lb. j.
Hyacinth pomade . .	lb. j.
Reseda pomade . .	℥viij.
Jasmine pomade . .	℥viij.
Oil of rose (floral) . .	ʒiiss.

Jockey Club

Rose pomade . . .	lb. ij.
Heliotrope pomade . .	lb. ij.
Jasmine pomade . .	lb. j.
Orange-flower pomade .	lb. j.
Cassie pomade . .	lb. j.
Tuberose pomade . .	lb. j.
Oil of bergamot . .	ʒiiss.
Oil of rose-geranium .	ʒiiss.
Oil of cloves . . .	ʒj.

Jonquil

Orange-flower pomade .	lb. j.
Tuberose pomade . .	lb. ij.
Cassie pomade . .	lb. j.
Jasmine pomade . .	lb. iij.
Essence of musk . .	ʒj.
Essence of ambergris .	ʒij.
Essence of Peruvian balsam	ʒij.
Tincture of storax . .	ʒiij.

Lily of the Valley

Rose pomade	lb. ij.
Reseda pomade	lb. ij.
Tuberose pomade	℥viij.
Jasmine pomade	℥viij.
Otto of rose	♏x.
Oil of bergamot	♏x.
Oil of ylang-ylang	♏xv.
Terpineol	♏vj.

Violet

Orange-flower pomade	lb. ij.
Reseda pomade	lb. j.
Jonquil pomade	℥viij.
Tuberose pomade	℥viij.
Essence of ambergris	ʒij.
Oil of neroli	♏vj.

The pomades in each case should be melted together by the heat of a water-bath, and while the mixture is cooling the perfumes are added.

Pomade Perfumes

I

Oil of citronella	ʒij.
Oil of bitter almonds	ʒij.
Oil of sandalwood	ʒij.
Oil of rosemary	ʒij.
English oil of lavender	ʒvj.
Oil of verbena	ʒvj.
Oil of bergamot	℥iij.
Oil of lemon	℥vj.

Mix.

Use ʒij. of this to each pound of pomade.

II

Ol. origani	ʒj.
Ol. caryoph.	℥j.
Ol. lavand.	℥j.
Ol. citronellæ	ʒiv.
Ol. amygd. amar.	ʒij.
Ol. cassiæ	ʒiv.
Ol. limonis	ʒiv.
Ol. bergam.	ʒiv.
Ol. jasmin.	℥j.

M.

III

Essence of raspberry	℥j.
Oil of cinnamon	♏xx.
Oil of citronella	♏xxv.
Oil of rose-geranium	♏xv.
Oil of bergamot	♏xx.
Peruvian balsam	♏xv.

Mix.

IV

Oil of bergamot	ʒx.
Oil of lemon	ʒiiss.
Oil of lavender	ʒj. ♏xl.
Oil of neroli	ʒj. ♏x.
Oil of rose-geranium	♏ 50
Oil of cinnamon	♏xx.
Oil of wintergreen	♏x.
Oil of ylang-ylang	♏v.
Otto of orris	gtt. ij.
Vanillin	gr. ij.
Coumarin	gr. iss.
Heliotropin	gr. ij.
Musk	gr. ij.

Mix.

Pomade Colourings

Yellow is the colour most commonly required for pomades. A preparation for cheap retail need not be coloured with anything else than palm oil, for although that colour bleaches somewhat rapidly on exposure, it is sufficiently permanent for a quick turnover, and is harmless. Gamboge gives a very pretty colour: it may be used as a tincture (one to five of rectified spirit), but it suffices to digest from 4 to 6 dr. of the powder in a pint of oil for an hour, then strain. This may be used immediately, or as required. Very pretty shades, from cream to orange, are obtained by the use of an oleaceous butter colouring, or oil-soluble aniline-orange. Safranine is one of the colours specially recommended: it is one of the azo colours. One part of safranine is dissolved in a mixture of 20 parts of S.V.R. and 80 of water, and sufficient of it used. The colour is permanent, and is not destroyed by borax or similar substances. Palmaphyll is another good golden colour.

Pink and Red are tints which alkanet very readily gives, and we cannot name a dye so well known and so generally useful. It is advisable to keep the colour ready prepared by macerating the bruised dye in olive oil for a fortnight and straining. Two ounces to a pint of oil suffice. Use enough of the red oil to give the tint of colour desired. Alkannin, the colouring principle, is also obtainable, as well as oil-soluble red anilines. A different tint is obtained with ammoniacal solution of carmine.

Green is a colour seldom required. The best is made by digesting 4 oz. of fresh spinach in a pint of oil or a pound of lard on a water-bath until the spinach is crisp, and all moisture has been dissipated. Then strain. The same colour is more readily obtained by dissolving a sufficiency of chlorophyll in oil, lard, or pomade basis, to give the tint desired (*see also* Green Oil, page 74).

HAIR OILS

The popularity of oils for dressing the hair is declining, yet this chapter would not be complete without reference to them. The fixed oils used as the basis should not be of the drying class, and it is that characteristic which makes rape and sesame oils, and even cotton-seed oil, so objectionable. They become sticky on the hair; but as we never hear of that objection, except in regard to the very cheapest articles, the oils mentioned need not be further considered here. Olive oil, almond oil, oil of peach kernels, and the so-called vaseline oil (*Paraffinum liquidum*, B.P.), are the fluids most readily obtainable by druggists, and best adapted for hair dressings. Castor oil, either *per se* or in mixture, is not at all nice.

We do not think that retailers have given sufficient attention to this branch of trade, for it is possible by care and skill to produce in the form of an oil a hair-dressing which may be unexceptionable, and the favour with which *Huile Philocome* has always been held by good customers shows that good prices can be obtained for superior oils. The finest product of the same character is made by mixing benzoated olive oil with perfumed oils prepared direct from the flowers by maceration. Equally fine are the oils compounded according to the following recipes. Benzoated Oil is made by digesting an ounce of bruised benzoin (Siam preferably) in a pint of almond or olive oil for three hours on a water-bath, and filtering through French grey paper. Oil so prepared does not become rancid.

Heliotrope

Benzoated oil . . .	℥xxx.
Heliotropin . . .	ʒss.

Dissolve by a gentle heat.

Jasmine

Benzoated oil . . .	℥x.
Jasmine oil (floral) . .	ʒx.
Oil of cloves . . .	♏x.
Oil of bergamot . .	ʒss.
Otto of rose . . .	♏v.
Oil of orange-flowers .	♏xx.
Oil of thyme . . .	♏j.

Mix.

Rose

Benzoated oil . . .	℥xx.
Otto of rose . . .	♏xx.
Oil of rose-geranium .	♏x.

Mix.

Violet

Benzoated oil . . .	℥x.
Violet oil (floral) . .	℥iiss.
Otto of rose . . .	♏ij.
Oil of cinnamon . .	♏iij.
Oil of cloves . . .	♏vj.
Oil of bergamot . .	♏xij.

Mix.

Ylang-ylang

Benzoated oil . . .	℥xxx.
Oil of ylang-ylang . .	♏xl.
Oil of neroli . . .	♏v.
Otto of rose . . .	♏xx.

Mix.

Other Odours

Mix 1 part of any floral oil with 4 parts of benzoated oil.

Three parts of any of the foregoing oils and 2 parts of absolute alcohol make excellent *brilliantines* of distinctive odour.

Macassar Oil.—A mystery still hangs over the composition of Rowland's famous compound—which has made poets sing and given a new word to the English language. There is an old fable that the chief component of the preparation is oil of ben, an oil obtained from the seeds of *Schleichera trijuga*, Willd., by expression or by boiling the bruised seeds in water and skimming off the oil which rises to the surface. This oil was, according to Mr. Robert Glenk, formerly imported into the United States, but latterly what found its way there was composed of cocoanut oil in which the blossoms of ylang-ylang, *Cananga odorata*, or of the false ylang-ylang, *Michelia Champaca*, had been digested. Now, ordinary oils under the same name, suitably perfumed and frequently coloured red with alkanet, have entirely replaced the natural product. Mr. Glenk received a small sample of the true oil from Mirzapore, and found that at the ordinary temperature it is semi-solid, of a yellowish-white appearance, with a weak odour of bitter almonds. It has a mildly acrid taste and an acid reaction to litmus paper. It is completely liquefied at 82° F., and solidifies at about 50° F. The oil has a specific gravity of 0·942.

A formula for preparing a so-called macassar oil for the hair, which has given great satisfaction to those who have used it, is the following :—

Castor oil	℥xvj.
Rectified spirit	℥iij.
Oil of nutmeg	♏xxx.
Oil of rosemary	♏x.
Oil of sweet marjoram . . .	♏x.
Oil of neroli	♏x.
Otto of rose	♏xx.
Essence of musk	ʒj.
Alkanet	sufficient to colour

Mix.

The following are other examples of formulas recommended :

I

Olive oil . . .	℥xxxij.
Alkanet	℥ij.
Oil of lemon . . .	ʒss.
Oil of cinnamon . .	♏xv.
Oil of cloves . . .	♏xv.
Otto of rose . . .	♏v.

Colour the olive oil by digesting the alkanet in it for an hour on a water-bath, filter, and add the perfumes.

II

Olive oil . . .	℥xxxij.
Alkannin . . .	ʒj.
Oil of cinnamon . .	♏xv.
Oil of cloves . . .	♏xv.
Oil of rose-geranium .	♏xx.
Oil of bergamot . .	♏v.
Otto of rose . . .	♏v.

Dissolve the alkannin in the olive oil and mix with the other ingredients.

III

Benzoated oil	℥vj.
Alkanet	ʒiiiss.
Cassia-buds	ʒiiss.
Oil of cinnamon	♏xx.
Otto of rose	♏viij.
Oil of bergamot	♏iv.
Oil of bitter almonds	♏v.

Digest the alkanet and cassia-buds in the oil as in No. i., filter, and add the perfumes.

IV

Benzoated oil	℥viij.
Alkannin	℈j.
Oil of bergamot	ʒss.
Oil of lemon	♏xx.
Oil of cinnamon	♏ij.
Essence of musk	♏ij.

Mix similarly to No. ii.

Burdock-root Oil

Rad. bardanæ	℥v.
Ol. olivæ	℥xvj.

Cut root small and digest with the oil for a few days, then filter and add

Ol. bergamot.	ʒiij.
Ol. geranii	ʒj.
Ol. limonis	ʒiss.

M.

Cantharidin Oil

Cantharidin	gr. j.
Acetone	♏xl.
Nut oil (ol. persic.) to	℥ij.

Dissolve the cantharidin in the acetone, add the nut oil, and perfume.

Green Oil

This can be made from grass as well as spinach. Crush the grass, say a good handful, and press out as much of the juice as possible. Macerate in as much rectified spirit as will cover it for a day, press, filter, and shake up the filtrate with its own volume of olive oil. The oil takes up the green colouring matter. Decant the spirit and reject it. Oil-soluble chlorophyll is now obtainable as a paste, and this is so convenient as almost to exclude such processes as that just described. Oil-soluble aniline blue is also used to give to olive oil a green colour.

Mexican Hair Oil

Ol. olivæ	lb. ij.
Rad. anchusæ	℥iiss.

Digest until well coloured, filter, then add

Ol. limonis	♏xxiv.
Ol. cinnamom.	♏xv.
Ol. caryoph.	♏xv.
Otto rosæ	♏vj.

M.

Cinchona Oil

Powdered cinchona	℥iv.
Water	℥viij.

Digest on a water-bath for an hour, then add

Olive oil	Oij.

and continue digestion until all water has evaporated. Filter and add

Alkannin	ʒij.
Oil of bergamot	ʒiv.
Oil of lemon	ʒij.
Otto of rose	♏viij.
Oil of neroli	♏iv.
Oil of cinnamon	♏j.

Mix.

Nursery Hair Oil

Benzoin	℥ss.
Alkannin	℥ss
Oil of stavesacre	℥j.
Almond oil	Oj.

Macerate for a week, shaking daily, filter, and add

Oil of ylang-ylang	♏xx.
Oil of neroli	♏x.

Mix.

A 4-oz. bottle of this oil retails at 1s. (*See also* page 91, iv.)

Vegetable Hair Oil

Benzoated oil	℥xij.
Otto of rose	♏xx.
Oil of bergamot	ʒj.
Green oil	℥ss.

Mix.

Walnut Oil

Fresh walnut-shells	℥ij.
Benzoated oil	℥x.

Crush the walnut-shells (gathered preferably at the end of August or beginning of September) and rub to a smooth paste. Digest this in the oil on a water-bath until all the moisture has dissipated, filter, and add

Otto of rose	♏iv.
Oil of neroli	♏viij.

Mix.

This oil is a true dye, imparting a fine brown shade to grey hair when used day by day.

Hair-oil Perfumes

I

Oil of bergamot	℥j.
Oil of lemon	℥ss.
Oil of lavender	ʒj.
Oil of cloves	ʒss.
Oil of cassia	ʒss.

Mix.

II

Oil of bergamot	℥ss.
Oil of lemon	ʒj.
Oil of petit-grain	♏xx.
Oil of rosemary	♏ij.
Oil of lavender	♏ij.
Oil of citronella	♏ij.
Musk	gr. j.

Allow to stand for a fortnight, then filter.

III

Oil of jasmin	ʒx.
Oil of bergamot	ʒvij.
Oil of cloves	♏xv.
Oil of lemon	♏viij.
Oil of rosemary	♏v.
Oil of neroli	♏xx.
Oil of thyme	♏j.

Mix.

IV

Oil of rose-geranium	℥j.
Oil of verbena	℥j.
Oil of thyme	℥j.

Mix.

V

Otto of rose	ʒss.
Oil of rose-geranium	ʒij.
Oil of bergamot	ʒij.
Oil of lemon	ʒij.
Oil of cassia	♏x.

Mix.

VI

Oil of bergamot	℥iv.
Oil of lemon	℥j.
Oil of rose-geranium	ʒss.
Musk	ʒss.

Macerate for a fortnight and filter.

VII

Oil of bergamot	℥j.
Oil of lavender	ʒj.
Oil of cassia	♏xv.
Oil of verbena	♏x.
Oil of neroli	♏v.

Mix.

VIII

Saffrol	ʒj.
Oil of lavender	ʒj.
Oil of lemon	ʒj.
Oil of cedar-wood	♏x.

Mix.

The following quantities of perfume suffice for a gallon of the best olive oil :—

Heliotrope

Oil of rose-geranium .	ʒiij.
Oil of cloves . . .	♏ 50
Peruvian balsam . .	♏ 50
Heliotropin (dissolved in a little warm olive oil) .	gr. xv.

Mix the balsam with the olive oil, and add the other oils.

Orange

Oil of bergamot . .	ʒvj.
Oil of bitter orange .	ʒiij.
Oil of orange-flowers .	ʒss.
Oil of rose-geranium .	♏lxxx.
Oil of petit-grain . .	♏ 50

Mix.

Reseda

Oil of bergamot . .	ʒx.
Oil of rose-geranium .	ʒiij.
Oil of cloves . . .	♏lxxx.
Oil of basilica . .	ʒiss.

Rose

Oil of bergamot . .	ʒvij.
Otto of rose . . .	♏ 50
Oil of rose-geranium .	ʒss.
Oil of cloves . . .	♏lxxx.

Violet

Oil of bergamot . .	ʒiv.
Oil of santal . . .	♏lxxx.
Oil of orris . . .	♏lxxx.
Oil of cloves . . .	ʒss.
Otto of rose . . .	♏xv.

Brilliantines

Separable

Castor oil . . .	ʒij.
Almond oil . . .	℥iv.
Glycerine . . .	ʒvj.
Perfume oils . . .	♏xv.
Absolute alcohol to . .	℥vj.

Mix.

Unseparable

Castor oil . . .	℥ij.
Rectified spirit, 60 o.p. .	℥viij.
Oil of neroli . . .	♏v.
Oil of rose-geranium .	♏x.
Oil of verbena . .	♏v.
Oil of lemon . . .	ʒss.

The green colour which is so much wanted in brilliantine is imparted by the addition of a sufficiency of green oil. A pale rose tint may be given with alkanet, and golden with gamboge or oily butter-colouring. Varieties of colour may also carry varieties of odour. Thus, the green may be flavoured with violet, pink with otto of rose, and golden with bergamot and lemon. If floral extracts are used in making brilliantine, it takes a long time to clear after being shaken up if made with 60 o.p. spirit, but with absolute alcohol the mixture quickly clears. Another simple form is olive oil ℥iv. and absolute alcohol ℥j., with perfume. There are preparations composed of about equal parts of oil, glycerine, and spirit. Vaseline oil is also excellent for making brilliantine.

There are also formulas containing honey, glucose, or glycerine and spirit without oil, but these are neither nice nor creditable to the retailer. Some exceedingly absurd formulas have also been published. We can find room for one example only—viz., No. I.—the rest being specimens of foreign brilliantines :—

I

Veal-grease	℥iiiss.
Spermaceti	℥iiiss.
White wax	℥j.
Almond oil	℥iiiss.

Mix.

II

Castor oil	ʒvj.
Glycerine	ʒvj.
Benzoin	ʒij.
Spirit	℥xxv.
Perfume	a sufficiency

Mix.

III

Castor oil	ʒvj.
Venetian soap	ʒij.
Benzoin	ʒij.
Rectified spirit	℥xxv.
Otto of rose or oil of neroli	a sufficiency

Mix.

IV

Glycerine	℥j.
Spirit	℥x.
Rose-water	℥x.

Mix.

LIME CREAMS

In this class of compounds are included lime creams and lime-juice and glycerine. There is a great variety of formulas, most of them innocent of lime-juice, and also of glycerine except to the extent that the combination of lime with the fatty acids of the oils used liberates a little glycerine. This preparation originated in 1864 with Mr. Eugene Rimmel. Within two years the lime-water and oil imitation came in, and in spite of the misnomer, the stuff has remained, because it is popular and suitable. But at the beginning of 1897 the Middlesex county authorities began to take action against retailers of 'glycerine and lime-juice,' on the ground that the preparations sold did not contain glycerine. Conviction followed in those cases in which glycerine was proved to be absent. It is advisable, therefore, that the preparation should be sold as 'Lime Cream,' or as 'Lime Cream, commonly called Lime-juice and Glycerine.' The best oils to use are almond and peach-kernel (nut-oil). The latter is somewhat variable, but a satisfactory oil, on the whole, and cheap. The lime-water should be fresh and of full strength : weak stuff is the cause of most failures. If anyone finds that a lime cream becomes rancid within a reasonable time he should try the addition of salicylic acid gr. iv. to each pint of the cream. This has in several cases been found to be satisfactory.

I

Almond oil	℥iiiss.
Oil of lemon	ʒj.
Lime-water to	℥viij.

Mix well by shaking. Sometimes a drachm of glycerine is added. This is to justify the name. This cream separates a little clear oil, but is a good article.

II

Almond oil	℥xij.
Olive oil	℥xij.
Lime-water	℥x.
Saccharated solution of lime	℥ij.
Oil of lemon	ʒij.
Essence of jasmine	ʒij.

Mix by shaking.

Nut oil may be used, and serves equally well.

III

Almond oil	℥viij.
White wax	℥ss.

Melt and add the following solution: —

Citric acid	ʒss.
Rose-water	℥iij.
Glycerine	℥j.

Shake well and add the following mixture: —

Oil of lemon	ʒij.
Oil of bitter almonds	♏iv.
Rectified spirit	℥j.

Mix.

IV

White wax	℥ij.
Spermaceti	℥ij.

Melt together and add

Almond oil	℥viij.
Oil of bergamot	ʒij.
Oil of lemon	℥ss.

Then the following warmed together: —

Glycerine of borax	℥ij.
Lemon juice	℥vj.

Mix.

Nos. III. and IV. are attempts to imitate Rimmel's preparation. No. III. is passable, but not a preparation that a pharmacist need be particularly proud of. No. IV. forms a pomade, from which the watery portion has a tendency to ooze out. If we use ʒij. instead of ℥ij. of wax and spermaceti, the result is better and liquid. We print both formulas as a warning. They are chestnuts which travel the rounds of the periodical press continuously. They deserve decent burial, and we trust that no one will resurrect them from these pages.

V

Ol. nucis	Oiv.
Aq. calcis	Oiij.
Liq. calcis sacch.	℥iv.
Ol. limonis	℥ss.
Ol. bergamot.	ʒj.
Ol. neroli	♏vj.
Ol. cinnamomi	♏vj.

In making this add the liq. calcis sacch. to the aq. calcis, then add both to the oil, shaking vigorously in a bottle capable of holding nearly double the quantity. Let it stand for a few days, and if any oil float on the surface add a little more liq. calcis sacch. When finished add the essential oils, and allow to stand a week, shaking occasionally, then bottle.

VI

Ol. amygdalæ	lb. ij.
Ceræ albæ	℥j.
Aq. calcis	lb. ij.
Glycerini	℥ij.
Ol. verbenæ	ʒj.
Ol. limonis	ʒvj.
Ol. bergamot.	ʒiij.

Melt the wax in a few ounces of the oil and add the rest of the oil, previously warmed. Mix the glycerine with the water, and add to the whole of the oils gradually and with constant shaking.

VII

Curd soap in powder	℥ss.
Water	℥iiiss.
Lime-water	℥xiiss.
Nut oil	℥xvj.

Dissolve the soap in the water by heating, and add to the lime-water and oil previously mixed. Then perfume.

VIII

Curd soap in shreds	℥iss.
Distilled water.	Oj.

Dissolve with heat, and while warm add to

Nut oil	Oiss.
Oil of lemon	ʒiss.
Oil of bergamot	ʒiss.

Mix.

IX

Tincture of senega	ʒss.
Almond oil	℥j.

Shake well and add the following mixture gradually:—

Glycerine	ʒij.
Lime-juice	℥j.
Rose-water	℥ij.

Perfume with

Oil of lemon	gtt. x.
Oil of bergamot	gtt. v.

Preparations VII. and VIII. closely resemble each other, but there is an essential difference between them. No. VII. sometimes goes wrong, although it is as nice-looking and white a preparation as one could wish. A few ounces more of water spoils it. The fact is, it is a mistake to use lime-water along with soap, as oleate of lime is thrown out, and somehow disturbs the emulsion. It is for this reason that No. VIII. is a good formula, and we may say that the cream bears dilution with water if it happen to be too thick. It does not agree with the name, however, and it would be better to use oil of limes instead of oils of lemon and bergamot, if it is to be called 'Lime Cream.' No. IX. is a preparation of different nature from all the foregoing but strictly a 'lime-juice and glycerine.' It has the disadvantage of erring a little to the thin side, and separates into two layers on standing, readily combining, however, on agitation. It forms an admirable dressing for hard and soft hair.

Almond Lime Cream

Crem. amygdal.	℥iv.
Glycerin.	℥iv.
Ol. amygd.	Oij.
Aquæ	℥xxxv.
Ol. limonis	℥ss.
Ol. amygd. essent.	♏x.
Ol. neroli	♏x.

Mix in the above order, in a large mortar.

Cheap Lime Cream

Potassæ carbonat.	ʒss.
Aquæ tepidæ	℥viiss.
Ol. olivæ	℥xxviiss.
Liq. ammon. fort.	ʒj.
Ol. limonis	ʒiij.

Dissolve the potash in the water and add the oil gradually, shaking after each addition. Lastly add the ammonia and the perfume, and set aside for a few days before bottling.

Citron Cream for the Hair

A

Ceræ albæ	ʒx.
Ol. amygdalæ.	℥ivss.
Ol. ricini	℥v.
Ol. olivæ	℥xiiss.

Melt by the heat of a water-bath.

B

Ol. limonis	ʒv.
Ol. amygdal. essent.	♏xij.
Ac. benzoic.	ʒj.
Cambogiæ	ʒj.
Spt. rectificat.	℥j.

Dissolve the gamboge in the spirit, filter, and mix the oils and acid with the filtrate.

Add B to A in small quantities at a time, shaking well. Next add the following, assiduously shaking:—

Acid. citric.	ʒiss.
Aquæ destillat.	℥v.
Glycerini	℥v.

If carefully made, this turns out a golden-coloured semi-fluid preparation, and is retailed in 3-oz. round-shouldered bottles at 1*s*.

Lanolin Hair Cream

1.	Crem. amygdal.	ʒj.
	Glycerin.	ʒj.
2.	Ol. amygd.	ʒvj.
	Lanolin.	℥ss.
	Otto rosæ	♏vj.
3.	Tr. canthar.	ʒij.
	Aquæ ad	℥iv.

Mix the first two lots in separate mortars; gradually add No. 2 to No. 1, then stir in No. 3 gradually.

Euchrisma

Castor oil	℥iss.
Oil of cloves	♏v.
Oil of verbena	♏v.
Rectified spirit	℥x.

Mix.

Crinema

This is euchrisma perfumed with oils of cassia and verbena.

Tricopherous

Castor oil	Oj.
Rectified spirit (60 o.p.)	Oj.
Tincture of cantharides	℥j.
Oil of bergamot	ʒij.

Colour with alkanet, allow to stand for a few days, and filter.

BAY RUM (*Spiritus myrciæ*)

Perhaps there is no hair preparation so lavishly used by English-speaking people as bay rum. Although its use is in England confined to the well-to-do it is otherwise in the New World, especially in the United States. There it is used by middle-class and first-class hairdressers, with much liberality, as a wash for the skin after shaving and as a cooling application to the head. The comparatively low U.S. spirit duty doubtless accounts for this liberality, just as the high British spirit duty prevents its greater use.

Bay rum is a West Indian product, or originated in the West Indian Islands. The article exported from the principal seaports there is not made directly from the leaves of *Myrcia acris* (*Pimenta acris*), but by dissolving freshly made bay oil in white rum. We have it on excellent authority that in Dominica the leaves after they are picked from the tree are dried before being placed in the distilling vessel. The oil produced is then dissolved in rum of about 18 o.p. in the proportion of 24 oz. to 100 gallons of rum. Some manufacturers vary the proportions according to their fancy, but few if any add other flavouring oils. One of the principal manufacturers in the West Indies states that in the preparation of his rum only the true leaves are used, and they are not dried, but thrown fresh into the still along with the ripe berries in a certain proportion. The essential oil of the berries has a much stronger aroma than that of the leaves, so that a bay rum distilled partly from the berries has a stronger odour, and keeps its flavour longer, than if distilled from the leaves alone. The rum used for the distillation must be of the best quality, perfectly pure, and without any foreign odour. A good St. Croix rum serves the purpose best, but it must be considerably stronger than what is generally brought into the market. Distillation is best done by steam in copper stills. These remarks specially apply to those who are in such a position as to be able to distil the spirit from fresh materials; but a very large proportion of the bay rum used is made by dissolving the oil in dilute spirit, with or without other flavouring agents. From a number of formulas we quote a selection of the more important. The first two are given as typifying those formulas which are intended to reproduce the West Indian flavour. The first is as near an approach to the true article as can be desired, but the second is an entirely foreign compound; distinctive enough, it is true, still not like true bay rum.

I

Jamaica rum	℥xvj.
Rectified spirit	℥lxiv.
Distilled water	℥xlviij.

Mix and add

Oil of bay	℥j.

Dissolve.

II

Myrcia acris leaves	lb. ij.
Cardamoms	ʒviij.
Cassia	ʒij.
Cloves	℥iss.
Rum	Oxiv.

Macerate a week and distil 1½ gallon.

III

Oil of bay	ʒj.
Oil of orange-peel	ʒj.
Oil of pimento	ʒj.
Rectified spirit	Oviiss.
Water	Oivss.

Mix, and after a few days filter.

IV

Oil of bay	℥j.
Oil of orange-peel	ʒss.
Oil of pimento	ʒss.
Rectified spirit	℥lxxvj.
Water to	℥cxxv.

Dissolve the oils in the spirit, gradually add the water, and after eight days filter.

No. III. is a German formula, said to yield 'an unsurpassed product.' No. IV. is from the United States Pharmacopœia. Apparently No. III. is a copy of the latter with the oil of bay unaccountably reduced to a sixteenth of what it should be. We print the two recipes together as an object lesson on how formulas change as they go round the world.

V

Oil of bay	ʒx.
Oil of pimento	ʒj.
Acetic ether	℥ij.
Rectified spirit	Cong. iij.
Water	Cong. ij.

Prepare as No. IV.

VI

Oil of bay	ʒvj.
Oil of pimento	♏xxv.
Acetic ether	℥j.
Rectified spirit	Cong. j.
Jamaica rum	Cong. j.

Prepare as No. IV.

Acetic ether is supposed to give the preparation a more natural flavour. It will be understood that uncoloured rum should always be used. Some preparations sold in this country are coloured because, we suppose, the popular idea of rum is a brownish liquid. Colouring is as much out of place as the letter 'h' in the word. Rose-water, essence of violets, and solution of ammonia are found in other formulas, but they are entirely foreign to the preparation, and unnecessary additions.

Bay Rum Hair Wash

I

Carbonate of ammonia	ʒv.
Borax	℥ss.
Distilled water	℥xxv.

Dissolve. Separately mix

Oil of bergamot	♏viij.
Oil of rosemary	♏iij.
Oil of bay	♏v.
Otto of rose	♏ij.
Powdered talc	ʒv.

Then gradually add the aqueous solution, and, after well mixing, filter through a moistened filtering paper. To the filtrate add

Glycerine	ʒx.

Mix.

II

Glycerini	℥iv.
Tr. cantharid.	℥ss.
Liq. ammoniæ	℥ss.
Aq. rosæ conc.	℥ij.
Spt. myrciæ	℥x.

M.

Bay Rum Hair Tonic

Bay rum	Oiv.
Glycerine	℥xvj.
Tincture of cantharides	℥viij.
Tincture of quillaia	℥viij.
Rose-water	℥viij.
Orange-flower water	℥viij.

Mix and filter.

Bay Rum After-shave

Also a good lotion for chapped hands, and useful as a bath perfume.

Bay rum	℥xlviij.
Glycerine	℥viij.
Extrait of violets	℥ss.
Rose-water	℥viij.

Mix in above order and filter.

Bay Rum Shampoo

White Castile soap	℥ss.
Rose-water	℥j.
Solution of ammonia	℥j.
Bay rum	℥ij.
Distilled water to	Oij.

Dissolve the soap in 30 oz. of water by heating; cool to about 100° F., and add the rest of the ingredients.

HAIR LOTIONS AND HAIR WASHES

The primary intention of hair washes is as a stimulus to the hair follicles. They are best applied with a small sponge, which when damped with the lotion should be gently rubbed upon the skin, the hair being parted for this purpose. When the whole surface is treated in this way, the application should be followed by vigorous brushing in one direction, so as to assist in the evaporation of the lotion and to complete the stimulus.

Much more use may be made of hair lotions for the relief of headache. For this purpose they should be alcoholic and contain acetic acid well covered by perfumes. When applied freely and followed by gentle brushing such lotions relieve the sick headache of women after other remedies have failed.

The first group of recipes which we give are mostly for lotions of a simple character, to any one of which the retailer may attach any name he pleases. In each case, however, we attach a name. Some of these names are merely suggestive.

Borax and Camphor Lotions

I

Honey	℥j.
Borax	℥j.
Cochineal	ʒij.
Distilled water	℥xv.

Powder the solids and pour upon them the water boiling. Then stir in the honey, and when lukewarm add the following solution :—

Oil of rosemary	♏xv.
Camphor	ʒj.
Rectified spirit	℥ij.

After standing for a day filter.

II

Glycerine of borax	℥j.
Spirit of camphor	ʒij.
Spirit of rosemary	℥j.
Aromatic spirit of ammonia	ʒiij.
Distilled water to	℥viij.

Mix the spirits and add to the glycerine and water. Filter through a wetted filter-paper sprinkled with carbonate of magnesia.

This is a nicer lotion than No. 1., the pink colour of which some object to.

Cantharidine Lotion

(Stimulating)

Spt. ammon. arom.	℥ij.
Glycerini	℥j.
Tr. cantharidis	℥ss.
Aq. rosmarini ad	℥xx.

M.

(Non-greasy)

Glycerine	℥iv.
Tincture of cantharides	℥ss.
Solution of ammonia	℥ss.
Rose-water (triple)	℥ij.
Bay rum	℥x.

Mix.

Chillie Hair-lotion

(Professor Gross's Prescription)

Tr. cantharidis	ʒiss.
Tr. capsici	♏xx.
Glycerini	℥ss.
Aq. coloniensis ad	℥vj.

M.

An Atomiser Wash

Acetic acid	℥ss.
Glycerine	℥ij.
Rectified spirit	℥ij.
Jockey Club	℥ss.
Tincture of saffron	ʒij.
Water to	℥xij.

Mix the spirit and Jockey Club with 2 dr. of talc and 6 oz. of water, filter through a wetted filter, and add the other ingredients.

Capillary Stimulant

Liq. ammoniæ	℥ss.
Tr. cantharidis	℥ss.
Aq. coloniensis	℥j.
Aq. ad	℥viij.

M.

This is the prescription of a famous physician, and was precribed to prevent the hair falling off. It is decidedly effectual, and should be applied to the thin parts with a sponge morning and evening.

Acid Stimulant

Acetic acid	℥v.
Spirit of chloroform	℥vj.
Eau de Cologne	℥vj.
Glycerine	℥iv.
Water to	Oiiss.

Shake with a tablespoonful of kieselguhr, and filter.

Alkaline Stimulant

Solution of ammonia	℥j.
Mindererus spirit	℥j.
Tincture of cantharides	℥ss.
Spirit of rosemary	℥iss.
Rose-water to	℥viij.

Mix.

These two lotions are to be used together—the acid one morning and evening, or when headachy, and the alkaline one every second night.

Acetous Hair-lotion

Acet. cantharidis	℥ss.
Tr. cinchonæ	℥ss.
Acid. acetic. arom.	℥ss.
Aq. coloniensis	℥ij.
Aq. ad	℥vij.

Mix and filter.

Stimulating Hair-lotion

Liq. ammoniæ	ʒvj.
Spt. ammon. arom.	℥j.
Ext. pilocarpi liq.	ʒij.
Aq. rosæ ad	℥viij.

Mix and filter.

These lotions to be used on alternate nights, being applied freely to the roots of the hair with a sponge, the hair being afterwards brushed for ten minutes. Two 16-oz. bottles of the above have been sold for half-a-guinea, so that there should be little difficulty in getting 2*s.* 6*d.* each for the 8-oz. bottles.

Alkaline Hair-lotion
(Dr. Tom Robinson's)

Boracis	ʒj.
Glycerini	ʒij.
Tr. cantharid.	ʒvj.
Liq. ammoniæ	℥j.
Ol. myrciæ	♏iij.
Aq. ad	℥vj.

Dissolve the oil in the tincture and add to the rest of the ingredients

Acid Hair-lotion
(Dr. Tom Robinson's)

Aceti aromatici	ʒij.
Glycerini	ʒij.
Spt. rectificat.	℥j.
Liq. epispastici	ʒj.
Aq. flor. aurantii	℥ij.
Aq. rosæ ad	℥vj.

M.

These lotions of Dr. Robinson's are for the prevention of Premature Baldness in men and women. The alkaline lotion should be used the first week, being well rubbed in with a piece of spongio-piline, but gently, in order that the weak hairs may not be dragged out. The second week use the acid lotion similarly, and proceed with this alternation, dressing the hair meanwhile with brilliantine.

Quinine Hair-tonics.—It is a popular notion that quinine has a tonic effect upon the roots of the hair when applied externally. It is a harmless belief, and the substances generally associated with the quinine do have a stimulating influence upon the scalp, so that the alkaloid may get the credit for virtues possessed by its associates. We are assured on excellent authority that the following recipe provides a preparation of marvellous efficacy in stimulating the growth of the hair :—

Sulphate of zinc	gr. xvj.
Sulphate of quinine	℈j.
Tincture of cantharides	℥j.
Bay rum	℥ij.
Glycerine	℥ij.
Water	℥ij.

Dissolve the quinine in the alcoholic liquids, and the zinc sulphate in the water; add the glycerine to this and mix the liquids.

This lotion is to be liberally sprinkled upon the scalp, and the latter gently shampooed for five minutes, adding more of the lotion to assist the friction with the fingers. We give two other recipes for good quinine lotions :—

I

Hydrochlorate of quinine	℈j.
Glycerine	℥j.

Rub together in a mortar and add the following to make a solution :—

Eau de Cologne	℥ij.
Bay rum	℥ij.
Rose-water	℥xj.

Filter.

II

Sulphate of quinine	℈j.
Castor oil	℥j.
Tincture of cantharides	℥ss.
Extrait of jasmine	ʒiij.
Eau de Cologne	℥iij.
Oil of bitter almonds	♏v.
Oil of bergamot	ʒss.
Rectified spirit	℥viij.

Mix and colour with tincture of alkanet if desired.

Eau de Quinine is a preparation originated by Ed. Pinaud of Paris, the original being a bright red preparation, which many have attempted to imitate, but few with success. The first and third of the subjoined formulas are the best; the second ('Made in Germany') has nothing in common with Eau de Quinine but the name. It is stated that the original Eau de Quinine contains no alkaloid.

I

Red sanderswood	℥ss.
Orris root	℥iv.
Cloves	℈j.
Nutmeg	℈ss.
Rectified spirit	℥xviij.
Water	℥vj.

Macerate for a week, filter, and to the filtrate add

Quinine hydrochlorate	℈j.
Eau de Cologne	℥j.
Oil of lavender	♏vj.
Oil of rose-geranium	♏x.
Oil of neroli	♏iv.
Glycerine	℥iss.
Cochineal colouring	ʒj.

Mix the cochineal with the glycerine before adding. Set aside for two weeks and filter.

Should be put up in round-shouldered stoppered bottles.

II

Castor oil	ʒx.
Peruvian balsam	ʒiij.
Rum	℥xiiss.
Tincture of cinchona	ʒx.
Eau de Cologne	ʒx.
Distilled water	℥vj.

Add the oil to the eau de Cologne, mix with the rum, add the balsam and tincture, and lastly the water. Allow to stand for three days, and filter through paper wetted with proof spirit.

III

Oil of rose-geranium	ʒiij.
Oil of sweet orange	ʒx.
Oil of bergamot	ʒx.
Peruvian balsam	℥iiss.
Tincture of cantharides	℥iv.
Tincture of cinchona	℥vij.
Soap liniment	℥xv.
Rectified spirit	℥xxxv.
Eau de Cologne	℥xxxv.
Cochineal colouring	℥v.
Brandy to	Oxviij.

Mix the whole together, allow to stand for a month, and filter.

This is an excellent but expensive *Eau de Quinine*, the recipe being a large manufacturer's.

Dandruff, or Scurf.—The recent investigations of Sebourand show that dandruff (seborrhœa) and alopecia are caused by a specific bacillus, which invades the hair-follicle and produces around it, and especially at its base around the hair-papilla, an afflux of wandering cells. The papilla gradually atrophies, producing as it does so a hair which is progressively more and more frail and devoid of pigment. Finally it dies, and the dead hair is expelled. In the seborrhœic infection the colonies of bacilli are enormously abundant. Scurf is composed of an infinite number of seborrhœic plugs turned out of the follicles, and each of these contains the bacillus in millions. The course which the disease takes, according to Schuldham, is: first, the contents of the fat-glands thicken, the oil changing from the fluid to a solid state. The orifice of the hair-follicle becomes blocked with the fat and accumulated *débris* of the epithelial tissue. Then follows a period of itching, more or less intense, due to the microspore lodging and developing in the effete matter thus produced. The fatty secretion becomes thicker and thicker, until there is no secretion at all, and, finally, the hair becomes dry and brittle from the stoppage of its natural fat; at the roots the epithelial cells accumulate, press upon the hair and break it, and the skin gets into an inflamed state, so that acne results.

This is dandruff in its most serious form. Before any case such as that can be treated it is first necessary to clean the head thoroughly, and this is done by shampooing with the following

Shampoo Liquid

Oil of lavender	♏x.
Rectified spirit	℥ss.
Soft soap, B.P.	℥ij.
Distilled water to	℥vj.

Dissolve.

The treatment then begins. Schuldham recommends a glycerine of tannin (10 to 20 gr. to the ounce), resorcin, or other antiseptic treatment. This is noteworthy. Lotions which contain an antiseptic are unquestionably the best. The first five recipes are well spoken of by the medical practitioners named, and they are intended to attack the disease shortly after it has been observed.

Dr. Mansel Sympson's Lotion

Tr. cantharidis	℥ss.
Acid. acetic. dil.	℥ss.
Spt. rosmarini	℥j.
Glycerini	℥ss.
Aq. rosæ ad	℥viij.

M.

Dr. Michie's Lotion

Liq. hydrarg. perchlor. (gr. iv.–℥j.)	℥iiss.
Liq. potassæ	ʒiij.
Aq. ad	℥vj.

M.

To be well rubbed into the hair twice a day.

Dr. Eigler's Cure

Caustic potash	gr. vj.
Carbolic acid	gr. xxv.
Lanoline	ʒv.
Cocoanut oil	ʒiv.

Mix, first dissolving the potash and acid in ʒj. of water.

To be rubbed into the scalp.

Alkaline lotions which penetrate the fatty secretion, or ethereal solvents of the secretion, are preferable, because they permit the bactericides to get at the bacilli.

Dr. Laird Pearson's Treatment

(No. 1 lotion)

Hydrarg. perchlor.	ʒss.
Glycerini	ʒv.
Aq. coloniensis	℥v.
Aq. ad	℥xv.

M. et S.

(No. 2 lotion)

Beta-naphthol	ʒij.
Spt. rectificat.	Oj.

Solve.

(Oily Application)

Acid. salicylic.	ʒij.
Tr. benzoin. co.	ʒiss.
Ol. olivæ ad	℥x.

M.

Wash the hair with terebene soap, rinse well, and dry with a rough towel. Rub in some No. 1 lotion, and again dry. Next apply No. 2 lotion, and allow it to dry spontaneously. Dress with the oily application and brush. This treatment should be carried out daily for a month, and then every alternate day for a fortnight. The dandruff disappears in a few days, and the hair becomes vigorous and supple in a remarkably short time.

The two recipes following are for Washing Spirits to put into the water used for washing the head :—

I

Tincture of quillaia	℥vj.
Tincture of capsicum	ʒj.
Eau de Cologne	ʒvj.
Glycerine	ʒvj.
Carbonate of ammonia	℈ij.

Mix.

II

Spirit of ether	℥iij.
Tincture of benzoin	ʒij.
Vanillin	gr. ss.
Heliotropin	gr. iss.
Oil of rose-geranium	♏ij.

Mix.

While any of the foregoing may be put up as specialities the following Scurf-lotions are specially suited for general retail :—

I

Tr. cinchonæ	℥j.
Liq. potassæ	ʒij.
Potass. carbonat.	ʒj.
Aq. coloniensis	℥j.
Aq. ad	℥viij.

Mix and filter.

To be used twice a week.

II

Resorcin	ʒj.
Rectified spirit	℥viiss.

Dissolve and add to

Castor oil	ʒij.
Peruvian balsam	ʒss.

Shake well, perfume, and filter.

III

Salicylic acid	ʒv.
Rectified spirit	Oj.
Oil of wintergreen	♏v.
Otto of rose	♏j.
Oil of neroli	♏j.
Heliotropin	gr. iiss.

Dissolve and add

Glycerine	ʒx.
Water	℥x.

Filter through a wetted filter-paper.

IV

Beta-naphthol	ʒv.
Proof spirit	℥xv.
Tincture of quillaia	℥xv.
Glycerine	ʒx.
Ess. Bouquet	ʒvj.

Mix and filter.

To be used after washing the hair. Apply any one freely through a sprinkler, shampooing with the fingers for five minutes. Keep the head covered for half an hour, and dress the hair with a little Carbolated Brilliantine, which is ordinary brilliantine made with oil containing 5 per cent. of carbolic acid. Any ordinary pomade may be used as a dressing, but add to each ounce ung. hydrarg. nit. ℈j. Brilliantine is preferable. Lime cream is objectionable.

Rosemary Hair-lotions.—Rosemary has from the earliest times been a favourite hair stimulant, and is still popular.

Acetous.

Acetic acid . . .	℥ss.
Vinegar of cantharides .	ʒj.
Spirit of rosemary . .	℥j.
Essence of white rose .	ʒj.
Water to . . .	℥viij.

Mix.

Alkaline

Borax	℥ss.
Glycerine . . .	℥j.
Solution of ammonia .	℥j.
Spirit of rosemary . .	℥iss.
Rose-water to . .	℥xvj.

Rub the borax with the glycerine, add the water, dissolve, then the other ingredients, and filter through mag. carb. levis.

Brilliant

Tr. cantharidis . .	℥j.
Spt. rosmarin. . .	℥iij.
Ol. amygdal. dulc. . .	℥iv.
Ol. lavand. ang. . .	♏x.
Ol. bergamot. . .	♏xx.
Otto rosæ . . .	♏iv.

M.

To be applied every other morning, well shaking the bottle before use.

Saponaceous

I

Potassæ carbonat. . .	ʒj.
Saponis mollis, B.P. .	ʒj.
Spt. rosmarini . .	℥j.
Aq. ad	℥viij.

M. et S.

II

Saponis mollis, B.P. .	℥ss.
Spt. tenuior. . . .	℥j.
Ol rosmarini . . .	♏xxv.
Ol. lavand. . . .	♏viij.
Aq. ad	℥viij.

Mix in above order and filter.

Glycerine and Rosemary

Ol. amygdal. dulc. . .	℥j.
Liq. ammoniæ . .	ʒiij.
Ol. rosmarini . . .	♏x.
Glycerini . . .	ʒij.
Spt. vini rect. . .	ʒiv.
Aq. rosæ . . .	℥viij.

Mix the oils with the solution of ammonia and 2 oz. of rose-water, shake well, and add the glycerine, spirit, and the rest of the rose-water.

Tilbury Fox's Lotion

Tr. nucis vom. . .	ʒiij.
Aceti destillat. . .	℥iiss.
Tr. capsici . . .	ʒj.
Tr. cantharidis . .	ʒvj.
Spt. rosmarini . . .	℥j.
Aq. rosæ ad . . .	℥vj.

M.

(Modified)

Tr. nucis vom. . .	℥ss.
Tr. cantharidis . .	ʒiiss.
Glycerini . . .	ʒiiss.
Acid. acetic. . . .	℥ss.
Aq. rosæ ad . . .	℥vj.

M.

Children's or Nursery Hair-lotions.—The object of these is to kill pediculi and their ova, or 'nits.' They should in all cases be accompanied by the use of the small-tooth comb twice or three times a week. The hair should be washed every other night in the case of boys, and once a week in the case of girls, with carbolic soap, or, better, Thomson's Antiseptic Soap, which is a true parasiticide.

I

Cort. quillaiæ cont.	℥ss.
Liq. quassiæ	℥j.
Chiratæ	ʒij.
Aquæ bullientis	Oij.

Infuse for one hour, strain, and add

Sodæ salicylat.	ʒj.
Tr. lavand. co.	ʒj.

Set aside for four days, filter, and bottle.

Directions.—After combing the hair thoroughly, apply the lotion to the roots with a sponge, sprinkle some upon the hair-brush, and well brush the hair in order to distribute the lotion equally.

Four-ounce bottles have been sold at 7*d.*; 8-oz., 1*s.* It is a good lotion.

II

Stavesacre-seeds, in rough powder	℥ij.
Acetic acid	℥j.
Water	℥xvj.

Boil for ten minutes in a covered vessel, set aside till cold; then add

Rectified spirit	℥ij.
Oil of geranium	♏ij.
Oil of lavender	♏ij.
Oil of lemon	♏iv.

Filter and add

Glycerine	℥j.
Water to	Oj.

This is the Edinburgh Infirmary Pharmacopœia preparation. It is a valuable one, being certain in its effects. Use like No. I.

III

Sulphate of quinine	gr. x.
Acetic acid	℥j.
Glycerine	℥ij.
Conc. infusion of quassia	℥viij.
Eau de Cologne	℥j.
Rectified spirit	℥j.
Water to	Oj.

Mix and filter through a wetted filter-paper.

IV

Oil of stavesacre	℥ss.
Hair-oil perfume	a sufficiency
Olive oil to	℥vj.

Mix.

V

Quillaia-bark	℥j.
Eau de Cologne	℥j.
Rectified spirit	℥iij.
Water	℥viij.

Macerate for a week and filter into the following mixture:—

Glycerine	℥ij.
Solution of ammonia	℥j.
Tincture of capsicum	ʒij.
Jockey Club	℥j.
Camphor-water to	Oj.

Mix.

VI

Glycerine of borax	℥j.
Conc. infusion of quassia	℥iv.
Spirit of rosemary	℥j.
Camphor-water	℥iij.
Rose-water to	℥xij.

Mix and perfume.

No. V. is used as a shampoo in washing the head. There are many variations of the foregoing formulas, but it would be profitless to quote more. The stavesacre lotion is unquestionably the best. As a dressing use No. IV., which at the same time kills the 'nits'; in fact, it may be called Nit Oil (*see* *also* Hair-oils, page 74); but the article commonly sold under that name is 1-in-20 carbolic oil coloured with alkanet and perfumed.

Special Hair-lotions

Erasmus Wilson's

(The original prescription)

Ol. amygdal. . . .	℥j.
Liq. ammon. fort. . .	℥j.
Sp. rosmarini . . .	℥iv.
Aq. mellis . . .	℥ij.

M.

A few drops of oleic acid help the emulsification of the mixture, yet allow separation on standing. A creamy hair-wash is made by substituting rose-water for the honey-water. Sometimes 3 oz. each of the spirit of rosemary and honey-water are used.

(Without oil)

Ol. lavandulæ . . .	♏x.
Ol. rosmarini . . .	♏x.
Tr. cantharidis . . .	ʒij.
Aq. coloniensis . . .	℥ij.

M.

(Modified)

Acet. cantharidis . . .	℥ss.
Aq. mellis . . .	℥ss.
Glycerini . . .	℥ss.
Aq. flor. aurantii . . .	℥ij.
Aq. ad	℥viij.

M.

This is sometimes sold as 'Wilson's lotion' by hairdressers.

(Modified)

Boracis	℈j.
Aq. flor. aurantii . .	℥iss.
Aq. destillatæ . .	℥vj.
Ol. amygdal. . . .	℥ij.

Dissolve the borax in 2 oz. of water, shake up the oil with this, and add the rest of the waters gradually.

(As made in Germany)

A correspondent of the *Pharmaceutische Zeitung* gives the following as being a copy of a recipe for this hair-lotion written by Erasmus Wilson himself:—

Ol. amygdal. dulc. . .	℥j.
Liq. ammon. . . .	℥j.
Spt. chloroform. . .	℥j.
Spt. rosmarini . . .	℥v.
Ol. limonis . . .	ʒss.

M.

Hair-tonic

The following is said to resemble Koko for the hair:—

Pilocarpine nitrate . .	gr. j.
Glycerine of borax . .	ʒiij.
Rose-water to . .	℥viij.

Mix.

Locock's Hair-lotion.—Mr. Joseph Ince gives an interesting note on this celebrated lotion in *The Chemist and Druggist*, 1884, page 269. He says it was invented by the celebrated oculist Alexander for the private benefit of his wife. Sir Charles Locock, M.D., was recommended to try it in his own family, which he did with remarkable success. The fashionable physician took it to a West-end house to be dispensed, and the lotion became known and popular. The original formula is :—

Ol. macis	ʒss.
Ol. olivæ	ʒij.
Liq. ammoniæ	ʒss.
Spt. rosmarini	℥j.
Aq. rosæ	℥iiss.

The lotion should be made as follows :—Put the solid oil of mace in a mortar and mix with it the olive oil by vigorous and hard stirring with the pestle. Work in the solution of ammonia in the same manner until it is thoroughly combined and a pasty saponaceous mass is produced. Thin this by the slow addition of about an ounce of the water. Mix the spirit with the remainder, and work that mixture into the emulsion with great care.

The following formulas have also been dubbed the 'correct working formula' :—

A

Ol. macis	℥v.
Ol. olivæ	℥xx.
Liq. ammon. fort.	℥xx.
Spt. rosmar.	℥xl.
Aq. rosæ ad	Conj. ij.

B

Ol. macis	ʒj.
Ol. olivæ	ʒij.
Liq. ammon.	ʒij.
Aq. rosæ ad	℥iv.

Mix the oils, and gradually add the ammonia and water mixed together.

NOTE.—It is a curious comment upon the vicissitudes of specialities that Locock's lotion made by formula A is known in Germany as 'Viktoria Haarwaschwasser' (Victoria hair-lotion), and it appears to be well appreciated.

Bouchard's Lotion

For use after fevers, to prevent the hair falling out and strengthen it.

Castor oil	ʒij.
Tar	ʒss.
Tincture of benzoin	ʒvj.
Chloroform	ʒv.
Rectified spirit	℥xxxvj.
Perfume	a sufficiency

Mix.

Bartholow's Cure for Baldness

Ext. pilocarpi fl.	℥j.
Tr. cantharidis	ʒss.
Lin. saponis	℥iiss.

M.

To be rubbed into the scalp every day.

Cantharidine Hair-stimulant

Cantharidin	gr. v.
Acetic ether	ʒiij.
Glycerine to	℥j.

Reduce the cantharidin to powder and shake with the ether, then add the glycerine. Separately prepare the following mixture :—

Oil of rose-geranium	ʒss.
Oil of eucalyptus	ʒss.
Oil of rosemary	ʒss.
Oil of bergamot	♏xx.
Powdered borax	℥vj.
Caramel	ʒj.
Camphor-water	Oij.
Distilled water	Oij.

Triturate the oils with the borax, add the waters and the cantharidin solution, and allow to stand for a fortnight, shaking daily. Filter through powdered pumice (about 1 oz.), which should be shaken with the mixture before filtration.

The last has been put up in bottles like Cleaver's Cantharidin and Terebene Wash. It is to be used every morning and evening, well brushing after. The hair should be washed with soap and warm water, to which has been added a little of the following :—

Rosemary Hair-wash Powder

Pulv. quillaiæ	℈j.
Pulv. boracis	ʒij.
Pulv. camphoræ	gr. x.
Ol. rosmarini	♏iij.

M.

A nice powder for retailing in packets. The above is sufficient for a wine-bottle of water.

Dr. Rainy's Hair-wash

Tr. capsici . . .	℥ss.
Tr. cantharid. . .	℥j.
Ol. bergamott. . .	ʒij.
Aq. rosæ . . .	℥iv.
Spt. vini rect. ad . .	℥xij.

Mix and filter through mag. carb. levis.

Jaborandi Lotion

Jaborandi leaves . .	℥ss.
Cinchona bark . .	ʒj.
Rectified spirit . .	℥ij.
Bay rum . . .	℥ij.
Rose-water . . .	℥ij.

Powder the drugs and percolate with the mixed liquids. To the percolate add

Glycerine . . .	℥ij.
Essence of white rose .	ʒj.

Mix.

The following is a modification of the foregoing, called

The Premier Hair-restorer

Quininæ sulphat. . .	℈j.
Tr. jaborandi . . .	℥j.
Aq. coloniensis . .	ʒij.
Glycerini . . .	℥j.
Spt. myrciæ . . .	℥ij.
Aq. rosæ . . .	℥xj.

Dissolve the quinine in the rose-water with the aid of ac. sulph. dil. ♏xx. and add the glycerine. Mix the rest of the ingredients and add to the aqueous mixture. After four hours filter.

Pilocarpine Hair-lotion

Pilocarpine is as effective a restorer as jaborandi, and much nicer to use. It has been stated that Koko for the hair owes its efficacy pilocarpine, but this requires corroboration (*see* Hair-tonic, page 92). We quote the following formula from the 'Extra Pharmacopœia' :—

Nitrate of pilocarpine .	gr. ij.
Hydrochlorate of quinine.	gr. viij.
Glycerine . . .	ʒij.
Rose-water . . .	ʒvj.

Mix.

(Dr. Whitla's)

Pilocarpin. hydrochlor. .	gr. v.
Otto rosæ . . .	♏viij.
Ol. rosmarini . . .	ʒiv.
Lin. cantharidis . .	ʒiv.
Glycerini . . .	℥j.
Ol. amygdal. dulc. . .	℥ij.
Spt. camphoræ . .	℥iij.

M.

To be well rubbed into the scalp night and morning.

Dr. Neville Leslie's Hair-wash

Cantharidin	gr. j.
Ol. ricini	℥ss.
Ol. myristicæ essent.	♏x.
Ess. rosæ	q.s.
Spt. rectificat. ad	℥iv.

The cantharidin to be dissolved in a drachm of acetone before mixing with the other ingredients.

A small quantity of this lotion to be rubbed into the roots of the hair with a sponge.

To be put up in 6-oz. amber panelled bottles and sold at a good price.

Moustache-invigorator

Blistering-liquid (B.P.)	℥j.
Glycerine	℥j.
Nitrate of pilocarpine	gr. j.
Jockey Club	ʒij.
Rectified spirit to	℥vj.

Mix the liq. epispastic. with 3 oz. of S.V.R. and the Jockey Club, add the nitrate and the glycerine. Shake well till dissolved, then make up.

℥iss. of this sells for 2*s.* 6*d.* It should be painted over the lip with a camel-hair pencil at bedtime, three applications being made at intervals of five minutes.

NOTE.—This resembles a well-known and widely-advertised speciality, and, like it, it is apt to blister when first applied; but blistering is frequently the precursor of hair-growth.

Linimentum Crinale

(Squire)

Cantharidin	gr. j.
Acetic ether	ʒvj.

Dissolve and add

Rectified spirit	℥iij.
Castor oil	℥j.
Oil of lavender	♏xv.

Mix.

May be diluted with equal parts of rectified spirit for delicate skins.

This is a most effective stimulant for the growth of the hair, which seldom fails.

Lassar's Baldness-cure

First lather the scalp with tar soap, wash off with tepid then cold water, dry, and rub gently with

Sol. hydrarg. perchlor.	℥j. ex gr. iss.
Glycerini	℥iss.
Aq. coloniensis	℥iss.

M.

Dry and rub with 0·5 per cent. solution of naphthol in alcohol, and dress with the following oil:—

Salicylic acid	ʒj.
Tincture of benzoin	ʒiss.
Neatsfoot oil to	℥vj.

Mix.

The Treatment of Alopecia Areata (which is the disease referred to on page 87) by stimulants alone generally produces little or no benefit. This may be due to the disease being of a microbic nature, and therefore requiring an antiseptic remedy, as in Lassar's cure just mentioned. Practical experience proves the value of combining some antiseptic with the stimulant, or, better still, using first the one and then the other. We may therefore describe here a course of treatment generally applicable, and which should be adopted at the outset. The following pomade may be applied daily, after washing the parts with soft soap and warm water :—

Resorcini	ʒss.–ʒj.
Vaselini	ʒij.
Lanolini	ʒij.
Zinci oxidi	ʒij.
Pulveris amyli	ʒij.

Ft. pasta.

After about a week this should be replaced by a stimulant such as the Pilocarpine Pomade recommended by Whitla :—

Pilocarpini hydrochlor.	gr. xx.
Aq. dest.	ʒij.

M. et adde

Lanolini	ʒx.
Olei petrolei	ʒvj.
Olei bergamot.	ʒss.
Olei verbenæ	ʒss.

Ft. unguentum.

The stimulation may be continued for three weeks or a month. At the end of that time, if there are no signs of renewed growth of hair, the first pomade should be again used for a week, and then the stimulant may be resumed. One good authority uses as a stimulant chrysarobin with or without the addition of salicylic acid, the former in a strength of 8 to 10 per cent., and the latter 2 to 5 per cent. in ointment or traumaticin. In severe and extensive cases he cuts the hair close and applies acetic acid mixed with chloroform or ether. Besnier uses the following prescription successfully :—

Hydrate of chloral	ʒj.
Ether	ʒvj.
Glacial acetic acid	ʒj.–℥ss.

Reduce the hydrate to powder and mix with the liquids.

Applications of this paint are at first made two or three times a week ; they are afterwards continued at longer intervals, and during these intervals a mixture is used consisting of

Oil of eucalyptus	℥ss.
Oil of turpentine	℥ss.
Crude petroleum	℥j.
Rectified spirit	℥j.

Mix.

In the later stages of the disease he uses sulphur ointment.

Bald Patches on the Scalp, which arise from some parasitic skin diseases, are exceedingly difficult to rouse into hair-growth. The disease must first be eradicated by suitable treatment, such as the application of the following ointment:—

Ichthyol.	ʒj.
Hydrarg. oleat. (10 per cent.)	℥ss.
Adipis lanæ	℥ss.

M.

This to be applied morning and evening on lint and covered with oiled silk.

After a week wash with ichthyol-and-tar soap, allowing the lather to dry on the parts. This treatment with the soap is to continue for months if necessary. It is exceedingly effectual in some cases.

Except in certain special cases of baldness due to microbic influence, too constant washing of the hair is unnecessary and harmful. Once a week is quite often enough for cleanliness, as well as for maintaining the strength of the hair. The same remark applies to brushing: prolonged brushing, especially with hard brushes, should be avoided. There is a common notion that greasing the hair is vulgar, so many persons fall into the other extreme, and never apply any dressing at all. After the hair has been washed it is certainly beneficial to apply some brilliantine or oil. When the hair is becoming rapidly thinned, a stimulant, such as ammonia or cantharides added to the oil increases its efficacy.

COSMETICS AND POMADES FOR FIXING THE HAIR

Stick Cosmetic

I

Benzoated lard	℥viij.
White wax	℥iv.
Pomade perfume	ʒss.

Melt the wax, add the lard, and stir until creamy; then add the perfume and pour into moulds.

II

White wax	℥iss.
Beef-tallow	℥iij.
Oil of bergamot	ʒj.
Oil of cassia	♏x.
Oil of thyme	♏v.

Brilliantine Cosmetic

I

Lanolini	℥iss.
Cetacei	℥j.
Ol. ricini	℥iv.
Ol. amygdal. ess.	♏ij.
Ol. caryoph.	♏xx.
Ol. bergamot.	♏xl.

M.S.A.

II

Olive oil	℥x.
Spermaceti	℥iij.
Oil of bergamot	ʒij.
Oil of cloves	♏x.
Oil of rose-geranium	♏xl.

Melt the first two together and when nearly cold add the perfumes.

Saponaceous Cosmetic

White Castile soap (new)	℥v.
Water	℥j.
Mucilage of acacia	ʒvj.
Otto of rose	♏vj.

Shred the soap and put the water on it. Heat on a water-bath until uniform, then add the mucilage and the perfume, and cast into sticks. The dish should be tared, and when, after adding the mucilage, the contents weigh 6 oz. the cosmetic is ready for casting. Most of the water is evaporated.

Vaseline Cosmetic

Ceresine	℥j.
Vaseline	℥ij.
Mutton-suet	℥j.
Lard	℥ss.

Melt the substances in the order given, strain if necessary, and after perfuming pour into suitable moulds.

For white cosmetic white vaseline should be used, but for other colours the yellow. Burnt umber is used for the brown cosmetic, and drop black for black.

A Good Cosmetic Perfume

Oil of bergamot	ʒiiss.
Oil of petitgrain	ʒiiss.
Oil of lavender	ʒj.
Oil of cloves	ʒj.

Mix.

Superior Cosmetics

I

Wax	℥viij.
Cassie pomade	℥viij.
Tuberose pomade	℥viij.
Orris-root pomade	℥xvj.
Oil of bergamot	ʒiss.
Oil of geranium	♏x.

Melt the wax and stir in the pomades, using a gentle heat; then add the perfumes and mould.

II

Suet	℥viij.
Wax	ʒv.
Cassie pomade	℥viij.
Orris-root pomade	℥iiss.
Reseda pomade	℥iiss.
Oil of neroli	♏v.
Oil of geranium	♏v.
Oil of bergamot	ʒij.

Prepare as No. I.

III

Yellow wax	℥viij.
Cassie pomade	℥viij.
Orris-root pomade	℥viij.
Violet pomade	℥viij.
Jasmine pomade	℥viij.
Tuberose pomade	℥iiss.
Oil of bergamot	ʒiij.
Oil of geranium	♏x.
Oil of neroli	♏x.

Prepare as No. I.

IV

Yellow wax	℥x.
Cassie pomade	℥iiss.
Tuberose pomade	℥j.
Rose pomade	℥j.
Violet pomade	℥xij.

Prepare as No. I.

Fixateurs Superfins

(Heliotrope)

Cassie pomade	℥viij.
Vanilla pomade	℥viij.
Rose pomade	℥ij.
White wax	℥viij.
White vaseline	℥iv.
Cocoa butter	ʒx.
Oil of rose-geranium	♏x.
Heliotropin	gr. iij.

Melt the fats and the wax together, add the perfumes, mix, and cast into proper shapes.

(Lily of the Valley)

Rose pomade	℥viij.
White wax	℥iv.
White vaseline	℥iv.
Cassie pomade	℥iiss.
Orange pomade	℥iiss.
Jasmine oil (floral)	ʒiij.
Ceresine	ʒiij.
Oil of linaloes	♏xv.
Oil of coriander	♏vj.
Oil of nutmeg	♏ij.

Prepare like the heliotrope.

(Orange)

Orange pomade	℥xij.
White wax	℥viij.
White vaseline	℥iv.
Cassie pomade	℥ij.
Orange oil (floral)	℥ij.
Cocoa butter	ʒx.
Oil of rose-geranium	♏x.
Oil of neroli	♏x.

Prepare as above.

(Rose)

Rose pomade	℥ix.
White wax	℥iv.
White vaseline	℥iv.
Cocoa butter	ʒvj.
Ceresine	℥ss.
Oil of rose-geranium	♏xv.

Prepare as above.

(Violet)

Violet pomade	℥viij.
White wax	℥vj.
Jasmine oil (floral)	℥iij.
Cassie oil (floral)	℥iv.
Cassie pomade	ʒij.
Jasmine pomade	ʒj.
Orange pomade	℥ss.
Yellow beeswax	℥ij.
Yellow ceresine	ʒxiij.
White vaseline	ʒvj.
Cocoa butter	ʒvj.
Oil of rose-geranium	♏xv.
Peruvian balsam	♏xv.

Prepare as above.

(Ylang-ylang)

Rose pomade	℥iv.
Vanilla pomade	℥iiss.
White wax	℥iiss.
White vaseline	ʒx.
Yellow beeswax	ʒvj.
Cocoa butter	ʒiij.
Oil of ylang-ylang	♏x.

Prepare as above.

French (not Turkish) oil of rose-geranium should be used in these fixateurs.

Bandoline

Pulv. tragacanth.	℥j.
Spt. rectificat.	ʒij.
Ol. neroli	♏x.
Otto rosæ	♏x.
Aquæ fervid.	℥xxiv.

Put the gum in a large mortar and mix with the spirit in which the oils have previously been dissolved; then add the water and form it into a homogeneous mucilage.

Pommade Hongroise, or Hungarian Moustache-wax

I

Spermaceti	ʒij.
White or yellow wax	℥iiss.
Distilled water	℥vj.
Gum arabic	℥ij.
Powdered soap	ʒx.
Glycerine	ʒij.
Bergamot and geranium oils (of each)	ʒss.

Rub the soap and the gum with ℥iiss. of the water to a smooth fluid. Melt the wax and the spermaceti with the rest of the water in a water-bath, and mix with it the first compound (warmed) gradually, with vigorous stirring, keeping the wax mixture still hot. Then remove all from the water-bath, add the glycerine drop by drop, stirring assiduously all the time, and meanwhile incorporating the perfume. If the pomade has to be kept for a time add acid. benzoic. ʒss. The pomade is much improved by keeping for a month before bottling, and rubbing it in a mortar twice a week. For black or brown pomade a little umber or sienna may be rubbed smooth with the glycerine. For the white kind white wax only must be used. The following label will show the purpose of this beard-wax :—

HUNGARIAN
MOUSTACHE POMADE

An elegant Preparation which will retain the Beard in any desired form or direction.

II

Glycerini . . .	ʒj.
Pulv. acaciæ . . .	℥iiss.
Pulv. sapon. alb. . .	℥iiss.
Ceresini	℥iss.
Aquæ	℥x.
Ol. bergamot. . .	℥ss.
Ol. geranii . . .	ʒj.
Ol. lavandulæ . .	ʒss.

Mix the water with the glycerine and bring to the boil. In this dissolve the powdered gum arabic, then add the ceresine in shreds and the powdered soap, stirring well until the whole is well mixed. Weigh the contents of the dish, and if not 17½ oz. add water to that weight. Stir and transfer the whole to a warm mortar. Triturate assiduously and add the perfume.

Pommade Hongroise in Sticks

Glycerini . . .	℥ij.
Pulv. acaciæ . . .	℥iij.
Ceresini	℥v.
Ol. olivæ . . .	℥vj.
Aquæ	℥x.

Proceed as in the last formula, and when a translucent mass is obtained add

Liq. potassæ (s.g. 1·37) .	℥ij. ʒij.
Aquæ	℥iij.

Continue to heat on a water-bath for an hour and a half. Cool a small portion of it quickly, and if too hard bring it to the proper consistence with water, or continue the heat if too soft. Perfume and mould it into the desired shape.

Another stick pommade hongroise can be made by dissolving half an ounce of yellow resin in as much spirit, and adding it to 5 oz. of No. II. Pommade Hongroise, previously melted, and warming further until most of the spirit is evaporated. Pommade hongroise should be kept for at the least three months before bottling. It should be sufficiently soft to spread when first made. On keeping it firms, and should be triturated in a mortar once a week. It may also be put up in collapsible tubes, but should for this purpose be quite soft.

Moustache Fixature

I

Mastic . . .	ʒij.
Sandarac . . .	℥ss.
Colophony . . .	℥iss.
Rectified spirit . .	℥iij.
Essence Jockey Club .	℥ss.
Ether	ʒij.

Dissolve and filter.

II

Colophony . . .	℥ss.
Tolu balsam . . .	℥ss.
Benzoin	℥ss.
Sandarac or elemi . .	℥ss.
Rectified spirit . .	℥iij.

Dissolve, strain, and allow to settle until clear.

MOUSTACHE FIXATURE

Wet the Stopper with the Fixing Fluid and apply to the Moustache, or apply with a Tooth Brush, then manipulate the Hair into any form that may be desired. A comb held under the Moustache will prevent any of the Fluid touching the face. If any of the Fluid gets on to the face or fingers a little oil will instantly remove it.

Spirit Gum

Resin	℥j.
Castor oil . . .	℥ss.
Rectified spirit to . .	℥iv.

Dissolve and perfume.

For theatrical people this is made with S.V.M. and sold at 2*d.* per oz. Add a little perfume.

HAIR-CURLERS

The introduction of the hair-curling pin has helped to give the old-fashioned bandoline the go-by, because it is unsuitable for applying with the pins. The following two formulas are typical of the preparations now in use :—

Fluid

Potassæ carbonat. . .	ʒj.
Liq. ammoniæ . .	ʒss.
Glycerini . . .	ʒij.
Spt. rectificat. . .	ʒvj.
Aq. rosæ ad . . .	℥viij.

M.

Use aq. rosæ made from otto.

Powder

Dried carbonate of soda .	℥x.
Powdered acacia . .	℥iv.

Mix intimately, and divide each ounce into three packets.

Directions.—Dissolve the contents of the packet in a teacupful of hot water.

It need scarcely be explained that the reason why these preparations act as curlers is that, being alkaline, they saponify the natural fat of the hair, and when the latter becomes dry it is, in consequence, not so flexible, therefore keeps longer in curl. Borax is almost as good as carbonate of soda for the purpose. The gum is a good addition—better, indeed, than glycerine. The directions for the use of these are 'Damp the hair before curling.'

HAIR-RESTORERS

By this title is understood those preparations which restore the colour of the hair. They are slow-acting dyes. In 1869 *The Chemist and Druggist* appointed a commission to analyse the more popular hair-restorers, with the result that the following were found to be the nature of the contents of original bottles :—Allen's: Sulphur, 75·6 gr.; lead acetate, 87 gr.;

glycerine-water, 8½ oz. Rosetter's: Sulphur, 44·8 gr.; lead acetate, 21·87 gr.; glycerine-water, 10 oz. A. Ross's: Litharge, 3·8 gr.; solution of potash, sufficient to dissolve; water to 8 oz.

The following formula is based on these analyses. The only direction in which variety may be introduced is in the perfume. Here heliotrope is given, because it happens to be the odour of the most expensive restorer.

Acetate of lead	ʒiss.
Milk of sulphur	ʒiij.
Glycerine	ʒx.
Heliotrope perfume . . .	ʒij.
Water to	℥x.

Mix the powders intimately and rub up with the glycerine, gradually add the water, and lastly the perfume.

Some prescriptions give powdered cassia as an ingredient of Allen's preparation; about a grain to the ounce is the quantity usually mentioned. We know not upon what ground this is introduced.

Precipitated sulphur does not mix well with water, and for that reason the calcareous variety is here provided. But if it be preferred pure precipitated sulphur may take its place, using only half the quantity and 'killing' it with spirit before adding the glycerinated water.

One of the most celebrated French hair-restorers is a clear solution made by adding an excess of sodium hyposulphite to a soluble lead salt. This is said to be less harmful than the foregoing preparation, but we question that; and at the worst plumbism from the use of lead hair-dyes is exceedingly rare. The following is the formula for the

Transparent Restorer

Acetate of lead	ʒj.
Saturated solution of hyposulphite of sodium	a sufficiency
Glycerine	℥j.
Rectified spirit	℥ss.
Rose-water to	℥xx.

To the lead salt dissolved in 2 oz. of water add the solution of the hyposulphite until the precipitate formed is redissolved. Continue to add half as much more hyposulphite, then the rest of the ingredients.

Bismuth Restorer has, in consequence of antipathy to lead preparations, been suggested and used. The following gives fairly satisfactory results :—

Subnitrate of bismuth	ʒiij. ℈j.
Water	℥ij.
Nitric acid	ʒv.

Mix the bismuth with the water in an evaporating-dish, heat, and add the acid drachm by drachm until solution is effected. Then pour into the following solution :—

Tartaric acid	ʒiiss.
Bicarbonate of soda	ʒij. ℈iiss.
Water	℥xxxij.

Collect the precipitate on a calico strainer, wash well with water, drain, and dissolve in a sufficiency of strong solution of ammonia. To the solution add

Hyposulphite of sodium	℈v.
Glycerine	℥j.
Water	℥iij. or a sufficiency

The product should measure 8 oz. It is to be used like the lead restorers, and imparts a brown colour to the hair. For a black the application must be followed by ammonium sulphide solution.

Bismuth and lead restorers precipitate on exposure to light, and should be kept in amber glass bottles.

HAIR-DYES

The silver dyes are harmless and quick in action. They are favoured by those who wish to hide the effects of time. The following are fair examples of reliable recipes :—

No. 1 Bottle

Sodæ sulphurat.	ʒj.
Aquæ	℥iij.

S.

No. 2 Bottle

Argent. nit.	℈ij.
Cupri sulph.	gr. ¼
Liq. ammon.	ʒiij.
Aq. ad	℥iij.

M.S.A.

A celebrated French form.

No. 1 Bottle

Acid. pyrogal.	ʒss.
Sodii sulphit.	gr. x.
Spt. rectificat.	℥ss.
Aq. ad	℥ij.

S.

No. 2 Bottle

Argent. nit.	℈j.
Liq. ammon. fort.	q.s.
Aq. ad	℥ij.

Dissolve the nitrate in ½ oz. water, add ammonia until the precipitate is redissolved, and make up to 2 oz. with water.

Hindoo Hair-dye

No. 1 Bottle

Acid. pyrogallic. . .	℈j.
Acid. nitric. dil. . .	♏v.
Aq. ad	℥ij.

S.

No. 2 Bottle

Argent nitrat. . .	gr. vj.
Cupri sulphat. . .	gr. j.
Liq. ammon. . . .	q.s.
Aq. ad	℥j.

M. et S.

There are many varieties of these silver hair-dyes, but the foregoing are representative. Those which have pyrogallic acid for the No. 1 bottle are preferable to others containing a hydrosulphuret or sulphide, the latter being nasty to use, and, on the whole, not so good a dye. The reason for the latter statement will be obvious to those who are familiar with the chemistry of silver. When a sulphide is mixed with the silver solution, a sulphide of silver is formed which varies in colour from pale brown to black, the colour changing remarkably on exposure to light. With pyrogallic acid, on the other hand, we get an immediate reduction of the silver salt to oxide or even to the metallic state, the colour varying from brown to black, the darker colour always resulting when sulphite of sodium is added to the pyrogallic solution. The product in this case is more permanent, and this sufficiently accounts for the fact that the more popular dyes nowadays are those with pyrogallic acid.

These hair-dyes are put up in cases to hold a 1-oz. bottle (No. 1) and a 2-oz. (No. 2), or proportionately larger bottles, with two short-handled tooth-brushes of black and white bristle, and the directions for use are as follows :—

Cleanse the hair from all grease by washing it with warm water, having a little washing soda dissolved in it, and dry with a towel. Next pour a little of the fluid No. 1 into a saucer and apply with the white-haired brush ; immediately afterwards use No. 2 in the same way with the black brush, avoiding as much as possible touching the skin. Wipe the parts round the hair receiving the dye with a damp sponge, and do not wash or grease the hair for several hours after its application ; in short, the dye should be applied at night.

The more silver there is in the preparation, the darker the dye is. The following are the standard proportions :—

For Black and Brownish Black :—Silver nitrate ʒiiss., solution of ammonia q.s., water to ℥iv.
For Brown :—Silver nitrate ʒiss. to ℥iv.
For Light Brown :—Silver nitrate ʒj. to ℥iv.

When the hair shows patches of grey it is difficult to strike the exact colour. The plan to follow in this case is to notice, ten minutes after applying the silver solution, if the artificial colour is too dark, then sponge the hair with a solution of sodium hyposulphite gr. vj. to ℥j., and allow to dry.

For Blond Hair silver should not be used, but the following in the same manner :—

No. 1 Bottle		No. 2 Bottle	
Potass. permang.	℈j.	Sodii hyposulphit.	gr. ij.
Aquæ	℥j.	Aquæ	℥j.
S		S.	

A new kind of organic hair-dye has come into use in Germany during the past few years. It has been stated that para-phenyl-diamine is the basis of the dye. We have not met with the new dye, but think it most unlikely that para-phenyl-diamine can be the active constituent, as Frehse suggested, because it yields blue dyes, and this will result with the use of the amine and hydrogen peroxide. On the other hand, meta-phenyl-diamine yields on nitration brown dyes, such as Bismarck brown, and it has been suggested in *The Chemist and Druggist* that a solution of the amine, 5 gr. to the ounce of water, acidulated with hydrochloric acid, should first be applied to the hair, and followed by a solution of sodium nitrite, 5 to 10 gr. to the ounce.

Some people who are getting grey do not like the silver threads amongst the gold, and seek to get it all silvery at a sitting. This is how it is said to be done. First the hair is carefully brushed with a warm and strong solution of caustic soda most carefully applied, then washed with warm water, and dried with a soft towel. Next a permanganate solution is applied with a tooth-brush, and the hair combed with a perfectly clean comb. After a short time the hair is sponged with water and brushed with a hyposulphite solution until the manganese colour is entirely discharged.

Mercurial Hair-dye

The following gives a black shade, but we do not recommend it :—

I

Perchloride of mercury	.	gr. vj.
Chloride of ammonium	.	gr. vj.
Distilled water	. .	℥iij.

Dissolve by the aid of a gentle heat and add a few drops of rose-essence.

2

Hyposulphite of sodium	.	gr. x.
Water	. . . .	℥ij.

Dissolve.

The hair, free from grease and dry, is treated with No. 1, allowed to dry, and then similarly treated with No. 2.

Non-metallic Dyes

(Brown)

Pyrogallic acid	. .	℥ss.
Sodium sulphite	. .	ʒss.
Rectified spirit	. .	℥j.
Water	. . . .	℥iij.

Dissolve the acid in the spirit, the salt in the water, and mix.

(Chestnut)

Pyrogallic acid	. .	ʒj.
Nitric acid	. . .	♏x.
Water to	. . .	℥iv.

Mix and dissolve.

This will keep clear for a long time. Label :—

THE IMPROVED

CHESTNUT HAIR-DYE.

Carefully prepared from a physician's recipe. Does not stain the skin. Absolutely harmless. This colourless and odourless preparation gives to grey and white hair a deep chestnut colour ; it is harmless, and does not stain the skin.

Directions.—Wash and thoroughly rinse the hair ; when dry apply the dye with a sponge. This should be repeated daily.

Golden Hair-dye

Solution of hydrogen peroxide, 10 vols.

After washing and drying the hair, this solution is applied carefully with a sponge, or small hair-brush, damped with it. It must be used once a week or fortnight, according to the colour of the hair.

Vegetable Hair-dye.—Gawalowski proposes the use of ammonium anacardate as a hair-dye. The pericarp of *Anacardium occidentale*, or cashew-nuts, contains, besides tannic acid, two principal organic constituents. One of these, cardol, is an oily substance, possessing strongly irritating qualities ; the other, obtained uncombined from the investing membrane of the kernel, is anacardic acid, which is said to be perfectly harmless. The principles may be isolated by evaporating an ethereal extract of the pericarp and freeing the residue from tannic acid by water. The tannin-free residue is then dissolved in 15 to 20 parts of spirit and well shaken with freshly precipitated lead hydroxide, filtered quickly, and washed with spirit. During these processes the air should be excluded as far as possible. The precipitate is a fairly pure anacardate of lead. The cardol remains in the spirit. The lead precipitate is treated with ammonium sulphide and filtered; the filtrate, besides the surplus ammonium sulphide, contains ammonium anacardate. When cold sulphuric acid is added to it, the anacardic acid separates in the form of a soft mass, which soon hardens. This is pressed between layers of filter-paper, and, when dissolved in ammonia, constitutes the hair-dye, and is miscible with water.

By wetting the hair with this liquid, and afterwards using a comb dipped in a solution of sulphate of iron, a lighter or darker shade of colour is imparted, which is quite durable. The anacardic acid may also be made into a pomade, and oleate instead of sulphate of iron may be used to bring out the colour.

Henna Hair-dye.—Henna is the powdered leaves of *Lawsonia inermis*, a shrub indigenous to tropical Asia. It contains a peculiar brown colouring matter of a tannic nature, and has long been used by women of the Orient for dyeing their nails and hair. It imparts a reddish-brown colour, like auburn, and it is supposed that the secret hair-dye which was made notorious in Paris about 1890, through Madame Patti and others subjecting themselves to its influence, was a preparation of henna, but this is doubtful. The mode in which the dye was prepared did not transpire, but we may say that the way it is made in the East is to macerate the leaves in warm water two days, then boil and strain. This should be repeated, the liquors evaporated to a strength equal to 1 in 7, and 5 oz. of rectified spirit added to each pint. The colouring principle is also readily extracted by rectified spirit, and a 1-in-8 tincture may be used. Ammonia darkens the dye. The hair must first be thoroughly freed from grease by shampooing, and the tincture should not be applied to the skin, as it stains it. Oriental women use the hot decoction along with a similar decoction of indigo-leaves.

DEPILATORIES

Preparations for the removal of superfluous hairs must be included in any work dealing with the hair, for there is a brisk demand for them. Practically there is only one class of such compounds, and their influence depends upon the presence of a sulphide and a caustic alkali. They are applied as a paste freshly prepared.

The paste should be spread as thick as the blade of a knife over the parts from which the hair is to be removed. The softened hairs should be scraped from the skin with a dull knife or bone spatula, the parts washed with warm water, and afterwards thoroughly dried. Cold-cream should then be applied to the reddened surface. The length of time the pastes should remain upon the skin is best determined by the severity of their action. They cause slight itching, which sensation is followed by an intense burning; when the latter begins the paste should be removed. The effect of chemical depilatories is temporary. Their action extends no deeper than the epidermis; the hair-bulbs remain, and a new growth soon appears. Great care should be exercised in their application, and their effects should be carefully watched, for sometimes deep and painful ulcerations occur by their incautious use. The most effectual, or at least the most popular, depilatory is that which includes orpiment. It is a dangerous compound, for if the skin is broken arsenical poisoning may supervene. The barium sulphide preparation is almost as effectual a depilatory, and is free from danger. The following is a selection of approved recipes:—

I

Quicklime . . .	℥xvj.
Pearlash	℥ij.
Liver of sulphur . .	℥ij.

Powder very finely and keep in a stoppered bottle.

Directions.—When required for use mix a small quantity with water to form a soft paste; apply to the spot, and in three minutes remove with a paper-knife. If the skin smarts much, apply a little cold-cream.

II

Barium sulphide	℥j.
Zinc oxide	℥j.
Starch	℥ij.

Mix.

III

Sodium sulphide	ʒvj.
Powdered lime	℥iij.
Starch	℥ij.
Powdered orris	℥j.

Mix.

McCall Anderson's

Barium sulphide	ʒiss.
Zinc oxide	ʒvj.

Mix.

Martindale's

	Parts
Sulphide of barium (in fine powder)	1–3
Starch-powder	3

Mix.

Make into a paste with water at the time of using, spread over the part required, and remove at the end of five or ten minutes.

Neumann's

Slaked lime	℥iss.
Orpiment	ʒiij.
Starch	℥j.

Triturate to a uniform powder.

The sulphide of barium should be fresh. It can be prepared by making barium sulphate and its own weight of charcoal into a paste with linseed oil, rolling the paste into the shape of a sausage, and placing it on a bright fire to incinerate. When it has ceased to burn, and is a white-hot mass, remove from the fire, cool, and powder. Any of the foregoing may be made into Depilatory Pastes with soft soap or glycerine. Another way is to take fresh-burned quicklime 30 parts, slake with about 15 parts of water, and when cold sift. Place the powder in a wide-mouthed bottle and add water to make a paste. Pass sulphuretted hydrogen through a tube to the bottom of the paste for an hour or two, then add glucose 70 parts and oil of lemon 3 parts. This paste does not keep well.

SHAMPOOING PREPARATIONS

These should contain a little free alkali and soap or quillaia, and are best when recently prepared. The addition of saffron or gamboge to any of them gives a nice colour, and transforms them into egg julep. It is well to note, although the fact is commonly known, that purely aqueous solutions of hard soap gelatinise quickly; but this not the case when a fair percentage of spirit is present.

I

Saponis mollis	℥j.
Liq. potassæ	ʒj.
Spt. rectificat.	℥ij.
Ol. odorat.	q.s.
Aq. ad	Oj.

M.S.A.

II

Liquor. ammoniæ	℥j.
Aq. coloniensis	℥j.
Saponis mollis	ʒiv.
Spt. rectificat.	℥vj,
Aq. ad	Oj.

Dissolve the soap in the spirit, add the rest of the ingredients, and filter.

III

Carbonate of ammonia	℥ss.
Borax	℥j.
Hair-oil perfume	q.s.
Rectified spirit	℥ij.
Water	℥xxv.

M.S.A.

IV

Carbonate of potash	ʒj.
Solution of ammonia	℥ij.
Tincture of cantharides	ʒj.
Tincture of capsicum	℥ss.
Rectified spirit	℥x.
Water to	Oiij.

Dissolve, mix, and perfume.

V

Ext. quillaiæ liq.	℥ij.
Aq. coloniensis	℥ij.
Glycerini	ʒj.
Spt. rectificat.	℥iij.
Aq. rosæ	℥viij.

M. et filtra.

VI

Carbonate of ammonia	ʒij.
Rectified spirit	℥ij.
Glycerine	ʒj.
Rose-water to	℥xvj.

Mix.

Egg Julep.—The household preparation which goes under this name is made from eggs, and is a good hair-cleanser that leaves the hair in a nice, flexible condition. A preparation of this character for bottle is made by mixing the yolks of two eggs with an ounce of glycerine of borax and gradually adding 4 oz. of water, then 3 oz. of aqua mellis in which salicylic acid ℈j. is dissolved, and 1 oz. of hard soap dissolved in 6 oz. of boiling water, making up to 20 oz. with water. Preparations sold retail are alkaline soapy solutions, such as the following :—

I

Transparent or fine curd soap	℥ss.
Saffron	ʒss.
Water	a sufficiency

Shave the soap fine and boil it and the saffron in a quart of water. When the soap is dissolved, strain, and add, when cold, the following solution :—

Oil of lavender	♏xl.
Oil of cloves	♏x.
Otto of rose	♏xv.
Oil of bergamot	♏xv.
Essence of musk	ʒj.
Rectified spirit	Oj.

Make up the julep to 1 gal. with water.

II

Primrose soap	℈j.
Powdered borax	℥ss.
Solution of potash	ʒiij.
Solution of ammonia	ʒj.
Oil of Turkish geranium	♏xx.
Oil of lavender	♏x.
Tincture of saffron	ʒij.
Rectified spirit	℥j.
Distilled water to	Oj.

Shred the soap fine and just cover it with water. Allow to stand all night, and next morning rub it smooth in a mortar, add more water, the borax, and solutions; dissolve and strain. Then add the oils dissolved in the spirit, the tincture, and finally water to 1 pint. Solution of egg-yellow (p. 424) may be used in place of saffron.

No. I. is Piesse's formula given in the 'Art of Perfumery,' but here extended so as to include the ingredients of the perfume. It is an unworkable formula, and produces a solution which gelatinises. No. II. gives a preparation similar to what barbers use, with the cloud of glistening crystals. Instead of saffron, which is only used to colour the julep, a few drops of a solution of the yellow dye, crocein, B, or tr. cambogiæ may be used.

Dry Shampoos

are highly spirituous solutions, such as

Sapo. castil. alb.	ʒj.
Ol. lavand.	ʒj.
Spt. rectificat.	℥viij.
Aq.	℥iij.

Macerate for a day or two, filter, and add

Liq. ammon.	℥j.

M.

Balsamic Shampoo

Rosemary-leaves (stripped from the stalks)	℥xij.
Castile soap	℥iij.
Chloride of ammonium	℥ss.
Carbonate of potash	℥iv.
Red sanderswood	℥ss.
Water	Cong. iss.

Boil the rosemary, soap, and sanderswood in the water for twenty minutes. Then remove from the fire, and add the chloride of ammonium and carbonate of potash. Stir well and when cold strain.

Put this up in ½-pint bottles, and label to the following effect:—

> This Hair-wash thoroughly eradicates Scurf, and promotes a fine growth of Hair. To use it, put a tablespoonful in a pint of warm water, and wash the Hair with this mixture, shampooing well.

Shampoo-powder

A 2*d.* packet which we analysed contained

Dried carbonate of soda	ʒiss.
Dried curd soap	ʒiss.
Solution of orange	sufficient to colour

Mix.

This for a pint of warm water.

Hair-wash Powder

Powdered borax	℥xvj.
Camphor	ʒj.
Oil of bergamot	ʒss.

Mix the powdered camphor intimately with the borax and perfume.

Sold in ʒiij. packets for 1*d.* or 2*d.*

Rosemary Hair-wash Powder

Powdered borax . .	℥xij.
Dried carbonate of soda .	℥viij.
Oil of rosemary . .	ʒj.

Mix intimately.

Half an ounce of this sells for 1*d.*, and suffices for a quart jugful of hot water.

Children's Hair-wash Powder

Powdered borax . .	℥xvj.
Conc. infusion of quassia .	℥j.

Evaporate the infusion with an ounce of the borax until dry, then mix with the rest of the borax. Instead of the quassia, carbolic acid ʒij. may be used.

℥ss. makes a quart of lotion.

HINTS ON PUTTING UP SPECIALITIES

The following hints may not be altogether out of place in a book dealing with a large number of articles whose value often depends as much upon the manner in which they are put up as upon their intrinsic qualities :—

Bottles should be characteristic and good ; a badly-made bottle is an eyesore to the purchaser and a disgrace to the seller. Have them of the best 'metal,' with the name of the article on them if possible. If flats, let the angles be well defined : this adds greatly to beauty of appearance. Actinic phials make a good contrast with white glass, and are very useful. Panelled bottles may be extensively used when the article is sent out wrapped. For brilliant liquids nothing is more handsome than good white glass. It is now getting to be a recognised custom to put up hair-preparations in one particular style of bottle, toilets in another style, dental preparations in another, and so with labels and wrappers.

Twine.—If white, let it be thoroughly bleached ; if coloured, well dyed. The most useful colours are pink, lavender, and white.

Sealing-wax should be sparingly used, or not at all, on corks of counter specialities. Use rather the embossed circular labels, and a pleated or other cap.

Labels.—On the attractiveness of the label depends to a great extent the sale of a proprietary article. There is no excuse nowadays for ugly labels, as it is easy to obtain really artistic productions at very little cost. It is cheaper to spend 5*s.* on an original label of your own than 2*s.* 6*d.* on twice as many stock labels of the printer's which your neighbour may have also. Compose the wording of your own labels. There is plenty in this book which will assist you. The examples of labels given may also assist, but do not follow the styles of type given here, as these have been selected to fit the pages and not the bottles. Avoid gilding as far as possible, and stick to good-quality paper, nice-tinted inks, and distinctive, plain type without fancy borders. The florid age ended with crinolines.

Wrappings, Cartons, &c., give much scope for taste and gold, especially if embossing is indulged in. Better no carton at all than a cheap-looking one. The carton is a thing to indicate to the buyer that the article enclosed in it has a large sale. So do not use plain cartons with labels stuck on.

DENTAL PREPARATIONS

Some facts in regard to the structure and number of the teeth in man may be advantageous in introducing this chapter. There are thirty-two permanent teeth—viz. four incisors (cutting or front teeth, I), two canines (or eye teeth, C), four pre-molars, or bicuspids (B), and six molars (M)—in each jaw. They are arranged as follows:—

	M	B	C	I	C	B	M		
Upper . .	3	2	1	4	1	2	3	= 16	} 32.
Lower . .	3	2	1	4	1	2	3	= 16	

A tooth is divided into three parts—viz. the crown, the neck, and the root. The crown is placed above the gum, and is covered with enamel; the neck is situated at the margin of the gum; and the root is enclosed in the alveolus, or socket, and is covered with *cementum*. Upon the dentine surface of the tooth crown a substance layer is formed, remarkable for its density and hardness. This is the enamel, which is thickest at, and in the neighbourhood of, the cusps and cutting-edges of the teeth, and terminates at the neck, where it is slightly overlapped by the *cementum*. Dentine is a hard elastic substance, translucent in the healthy state, opaque in disease. The *cementum* resembles true bone, and forms a hard crust over the roots of the teeth, which are inserted into alveoli, or sockets, consisting of a series of cavities arranged along the border of each jaw. Each socket, whether for the single root of one-fanged teeth, or for any one of the fangs of teeth having several, is enclosed by four walls, one situated towards the lips or cheeks, and one towards the tongue or palate, as the case may be, in the upper or lower jaw; besides, two partitions exist which separate the alveoli individually. All these walls are perforated by innumerable minute openings for the passage of vessels to the outside of the fang, and at the deepest part of the sockets several larger openings convey nerves and blood-vessels to the pulp cavities of the teeth.

POWDER DENTIFRICES

The basic constituent of nearly all tooth-powders is precipitated chalk. We combine many things with it—acids and alkalies, soaps and oils, antiseptics and astringents—but the main thing is the chalk. Most of the precipitated chalk obtainable in this country is made in the process of softening hard domestic waters; and it occurs as an apparently amorphous, but nevertheless crystalline, powder. Both light and heavy varieties are obtainable. It is the faces of the crystals which give precipitated chalk its importance as a dentifrice constituent; for when rubbed upon the hard silicious enamel of the teeth it removes foreign matter without affecting the enamel injuriously. Prepared chalk, being amorphous and softer, is not so efficacious; but it may with advantage be used by persons who are unfortunate enough to have 'soft teeth'—as those having short-lived enamel are often called.

Heavy carbonate of magnesia is also frequently used in tooth powders: it is neither better nor worse than precipitated chalk. Precipitated silica is an excellent non-alkaline substitute for chalk. Cuttlefish-bone powder is another and valuable friction adjunct, especially for those who are afflicted with tartar. So also is pumice powder; but it is generally agreed by dentists that pumice should only be used in extreme cases, never daily. Certain vegetable powders, soap, &c., are often used in tooth-powders, but not for the purpose of friction. Charcoal is, however, and partly also on account of its deodorant property; a quality which is most probably chimerical. The presence of some detergent, such as soap or alkali, is now considered to be indispensable, for the teeth cannot be cleansed by mere rubbing. The examples which are given in the following pages sufficiently illustrate the various types of powder dentifrices. All should be made by sifting the powders through a No. 140 sieve. Separately triturate the perfume with a portion of the powder, add to the bulk, and sift several times through a No. 60 sieve.

Acid Dentifrice

Potassæ bitart. . .	℥vj.
Sacchar. lactis . .	℥vj.
Carmini	gr. v.
Ol. menthæ pip. . .	♏xv.

Triturate the carmine well with a few drachms of the sugar of milk, then add the rest gradually, and the oil drop by drop; then the cream of tartar, and sift.

Alkaline Dentifrice

Calcii carb. præcip. .	℥x.
Magnes. carb. pond. .	℥x.
Pulv. cinchonæ . .	℥x.
Ol. menthæ pip. . .	♏xl.

Mix well in a mortar the oil with an ounce of the chalk, gradually add the other powders, and sift several times.

These two formulas are from the French 'Codex.' Oil of peppermint is highly esteemed, especially on the European Continent, as a dentifrice perfume. It conveys a refreshing feeling to the mouth after a dentifrice is used, and is a valuable antiseptic; but in England peppermint alone is not appreciated, and it should be rounded off with some other perfumes. One of the best dentifrice perfumes is oil of wintergreen, which may be combined with other essential oils. Two drops of the wintergreen oil is enough for 1 oz. of powder.

One cannot triturate carmine too long with some of the powder of a dentifrice—chalk by preference if there is no sugar of milk in it—as thereby a fine shade of colour is obtained, and prolonged trituration is necessary to avoid a spotted appearance when the powder is wetted. It is better to use ammoniacal solution of carmine.

Antacid Tooth-powders

I

Pulv. sapon. alb. . .	℥j.
Sodæ bicarb. . . .	℥ss.
Cretæ præp. . . .	℥v.
Cretæ præcip. . . .	℥xj.
Carmini	gr. vj.
Ol. caryoph. . . .	♏xv.
Otto rosæ . . .	♏xv.

M

II

Pulv. sodæ bicarb. . .	℥ij.
Pulv. boracis . . .	℥iij.
Pulv. sapon. alb. . .	℥iij.
Pulv. terræ rosæ . .	℥iss.
Cretæ præcipitat. . .	℥xij.
Otto rosæ	♏xxxvj.

M.

Antiseptic Tooth-powders

I

Pulv. rad. irid. flor.	ʒiij.
Pulv. glycyrrh. decort.	ʒij.
Pulv. sapon. hispan. recent.	ʒvj.
Cretæ præcipitat.	℥j.
Acid. boric.	ʒij.
Acid. benzoic.	℈j.
Magnes. carb. pond. ad	℥iv.
Ol. eucalypti	♏xx.
Ol. rosæ virgin.	♏v.
Ol. menth. pip. ang.	♏v.
Ol. limonis	♏x.

Mix in the above order and pass through a fine drum sieve. If desired coloured add 20 gr. of carmine, which gives an elegant tint.

II

Dr. MacGregor's Prescription

Pulv. acid. boric.	℈ij.
Pulv. potass. chlorat.	ʒss.
Pulv. guaiaci	℈j.
Cretæ præcip.	ʒj.
Otto rosæ	♏j.
Magnes. carb. pond. ad	℥j.

M.

III

Mr. Sewill's Prescription

Pulv. sapon. alb.	ʒij.
Pulv. iridis	℥ss.
Pulv. boracis	ʒij.
Cret. præcip.	℥ij.
Acid. carbol.	ʒss.
Ol. eucalypt.	ʒss.

M.

IV

Pulv. sapon. alb.	℥j.
Cretæ præcipitat.	℥viij.
Acid. carbolic.	ʒj.
Ol. eucalypti	ʒss.

Mix well and sift.

V

Resorcin	ʒss.
Salol	ʒj.
Powdered orris	℥j.
Precipitated chalk	℥ij.
Carmine	gr. iij.
Oil of peppermint	♏vj.

Mix.

VI

Borated

Pulv. boracis	℥iv.
Cretæ præcipitat.	℥viij.
Pulv. myrrhæ	℥ij.
Pulv. iridis	℥ij.
Pulv. cinnamom.	℥ij.

Mix well and sift.

Aromatic Dentifrice

Magnes. carbon. pond.	℥vij.
Cretæ præcip.	℥xxiv.
Pulv. iridis flor.	℥iv.
Pulv. sapon. hispan. recent.	℥iv.
Carmin.	gr. xx.
Ol. caryoph.	ʒij.
Ol. cinnam.	ʒj.
Ol. origani pallid.	♏50
Ol. rosæ geranii	ʒj.
Ol. rosæ virgin.	ʒj.
Ess. moschi	ʒj.

Mix well and pass through a fine drum sieve several times.

Camphorated Chalk

I

Camphor.	℥j.
Cretæ præcipitat.	℥ix.

M.

II

Camphor.	℥j.
Pulv. iridis	℥ij.
Cretæ præcipitat.	℥v.

M.

The first recipe is the French form, and with more or less camphor (1 to 4 is common) is the one generally used. Reduce the camphor to fine powder with the help of rectified spirit, and gradually add the chalk, briskly triturating. Sift twice.

Carbolic Tooth-powder.—Some formulas have already been given under Antiseptic Dentifrices. Here it should be mentioned that when carbolic acid is mixed with chalk or other alkalies it slowly combines with the bases to form a carbolate, whereby the antiseptic power is not only diminished, but the odour of the acid almost disappears. *The Chemist and Druggist* has pointed out that one of the most popular carbolic dentifrices is made with precipitated silica or with fine white kieselguhr, such as 'Dimatos.' The latter has not only great absorptive power and neutrality, but is in itself superior to chalk as a friction agent, for each particle of the kieselguhr is the skeleton of a diatom. It may be used in any of the recipes given here, and the dentifrices may be tinted with carmine or otherwise. Terra alba (china clay) is also excellent for carbolic dentifrice, but lacks grit.

I

Terra alba (fine sifted)	℥viij.
Orris-powder	℥iss.
Powdered white soap	℥ss.
Carbolic acid	ʒss.
Camphor	ʒss.
Otto of rose	♏x.
Solution of carmine	a sufficiency

Proceed as with No. III.

II

Pulv. myrrhæ	℥j.
Terræ rosæ	℥ss.
Acid. carbol.	ʒss.
Pulv. sapon. castil.	℥ss.
Otto rosæ	♏xv.
Ol. caryoph.	ʒss.
Cretæ præcip.	℥xvj.

M.

III

Silicæ præcipitat.	℥vij.
Pulv. sapon. alb.	℥ss.
Acid. carbolic.	℈j.
Camphor.	℈j.
Ol. gaultheriæ	♏iij.

Rub the camphor and acid together and add ½ oz. of the silica, triturate well, and gradually add the rest of the ingredients and sift. May be tinted with rose pink.

IV

Acid. carbolic.	ʒij.
Pulv. iridis	℥ss.
Pulv. oss. sepiæ	℥ss.
Dimatos.	℥vij.
Ol. gaultheriæ	♏x.
Ol. menthæ pip.	♏iv.
Carmini	gr. iij.

Rub the carmine and acid with the orris and some dimatos and proceed as with No. III.

V

Soluble

Acid. carbolici	gr. vj.
Pulv. boracis	ʒj.
Pulv. sacch. lact.	℥ss.
Pulv. sacch. alb.	℥ss.
Pulv. cardamomi	gr. xv.
Ol. caryoph.	♏j.
Terræ rosæ	q.s.

M.

Charcoal Tooth-powders

I

Levigated charcoal	℥iv.
Heavy magnesia	℥viij.
Powdered sugar	℥iv.
Cream of tartar	℥j.
Oil of peppermint	ʒj.

Mix and sift.

This formula and No. III. are French; the first one provides a very refreshing preparation.

II

Pulv. ligni carb.	℥iij.
Pulv. calami	ʒv.
Pulv. pumici	ʒiiss.
Pulv. catechu	ʒiiss.
Ol. bergamot.	♏x.
Ol. caryoph.	♏vj.

Mix the pumice and calamus with the oils in a mortar, add the charcoal, mix, then the catechu and sift.

III

Levigated charcoal	℥viij.
Powdered cinchona	℥iv.
Oil of peppermint	♏xv.
Oil of bergamot	ʒss.

Mix and sift.

IV

Cretæ præcip.	℥viij.
Pulv. sapon. hispan. alb.	℥ij.
Pulv. oss. sepiæ	℥iij.
Pulv. magnes. carb. pond.	℥iij.
Pulv. ligni carbon.	℥xij.
Acid. benzoic.	ʒij.
Acid. boric.	ʒx.
Ol. neroli	gtt. xij.
Ol. caryoph.	gtt. xx.
Ol. amygd. amar.	gtt. vj.
Ol. bergamot.	ʒj.
Otto rosæ	gtt. vij.

M.

No. IV. has been highly recommended by eminent dentists as a valuable antiseptic powder for the teeth and gums. A common charcoal tooth-powder is a mixture of levigated charcoal and camphorated chalk, equal parts. This may be improved by adding an ounce of potassium chlorate to each pound. The objection to charcoal as a dentifrice is that the powder sometimes gets between the teeth and the gums, and in time a blue rim may be formed there. Charcoal has no peculiar advantage as a dentifrice.

Cinchona Dentifrice

Miller's

Cretæ præcipitat.	℥iv.
Pulv. cinchonæ	℥ij.
Conch. præparat.	℥ij.
Pulv. myrrhæ	℥j.
Pulv. caryophylli	ʒss.
Ol. cinnamomi	♏x.

Mix and sift.

Citroleine, or Lemon Dentifrice

I

Tint a pound of precipitated chalk with a strong tincture of saffron and lay on a paper to dry, meanwhile preparing the following:—

Saccharin.	gr. x.
Pulv. lap. pumic.	℥ij.

Triturate well together and add

Pulv. iridis	℥ij.
Pulv. sodæ bicarb.	℥ij.
Ol. limonis	ʒiij.

To this add the chalk, mix, and sift.

II

Cretæ præcipitat. . .	℥xvj.
Pulv. sacchar. alb. . .	℥ij.
Pulv. iridis . . .	℥iv.
Pulv. oss. sepiæ . .	℥ij.
Pulv. sodæ bicarbonat. .	℥ij.
Ol. limonis . . .	ʒij.

Prepare like No. 1.

Coralline Dentifrice

Cretæ præcipitat. . .	℥j.
Calcii phosphat. . .	℥iij.
Pulv. sapon. alb. . .	℥ss.
Pulv. corall. rub. . .	℥j.
Ol. neroli . . .	♏vj.
Otto rosæ . . .	♏v.
Ol. menth. pip. . .	♏iij.

Mix intimately and sift.

Court Dentifrice

Precipitated chalk . .	℥lx.
Carmine	ʒij.
Otto of rose	♏ 50
Oil of pimento . .	♏ 50
Oil of cloves . . .	♏ 50
Oil of cinnamon . .	♏xx.
Oil of lemon . . .	♏xx.
Grain musk . . .	gr. x.

Triturate the musk with the carmine and ½ oz. of chalk for five minutes, then add the oils one by one with about 1 oz. of chalk along with each oil. Continue trituration for at least ten minutes with half the chalk, add the rest, and sift three times.

An exceedingly nice tooth-powder, elegant in appearance, and of rich yet delicate odour.

Columbian Dentifrice

Precipitated chalk . .	℥viij.
Powdered soap . .	℥j.
Powdered cuttlefish-bone .	ʒiv.
Powdered orris . .	ʒiv.
Oil of wintergreen . .	ʒss.
Solution of carmine . .	ʒj.

Mix the colouring with the precipitated chalk by trituration, sift three times, and set in a warm place to dry. Mix the soap, cuttlefish-bone, and orris, to this add the oil of wintergreen, and lastly the coloured chalk. Sift four times.

Crown Tooth-powder

Pulv. boracis . . .	℥ss.
Pulv. sapon. alb. . .	℥ss.
Pulv. iridis . . .	℥j.
Pulv. oss. sepiæ . .	℥iss.
Pulv. sacch. alb. . .	℥ij.
Cretæ præcipitat. . .	℥vj.
Ol. gaultheriæ . .	♏viij.
Ol. menth. pip. . .	♏v.

Rub up the perfumes with 1 oz. of the chalk, gradually add the rest of the ingredients, and sift twice.

Dentenamel

Thymol. . . .	℈j.
Camphor. . . .	℈j.
Carmini	gr. xxiv.
Saccharin. . . .	gr. x.
Pulv. iridis . . .	℥iss.
Pulv. sapon. alb. . .	℥j.
Mag. carb. pond. . .	℥ss.
Cretæ præcipitat. . .	℥xij.
Ol. geranii . . .	♏xx.
Ol. gaultheriæ . .	♏iij.

Mix the carmine and the saccharin in a mortar with the carbonate of magnesia until perfectly uniform. In another mortar mix the thymol and camphor, and when liquid add the oils; with this mixture triturate the chalk added slowly and in small quantities, at the same time putting in the magnesia mixture bit by bit. Then add the other ingredients and sift twice.

The Dentist's Tooth-powder

Cretæ præcip. . . .	℥x.
Magnes. pond. . .	℥iij.
Pulv. iridis . . .	℥j.
Pulv. sacchar. alb. . .	℥j.
Acid. tannic. . . .	ʒj.
Pulv. saponis . . .	℥ss.
Otto rosæ . . .	♏xv.
Ol. limonis . . .	♏v
Carmini	gr. x.

M.S.A.

Edenflowers Dentifrice

Pulv. saponis alb.	ʒj.
Pulv. boracis	℥j.
Saccharini	gr. vj.
Pulv. oss. sepiæ	℥ij.
Pulv. iridis	℥iij.
Cretæ præcipitat.	℥xvj.
Ol. canangæ odorat.	♏xij.

M.S.A.

Eugenol Tooth-powder

Cocainæ hydrochlorat.	gr. ij.
Eugenol.	♏xvj.
Pulv. sacch. lactis	℥j.
Cretæ præcipitat.	℥j.
Calcii phosphat.	℥ij.

Put the cocaine in a mortar and drop on it about 20 minims of proof spirit, add the eugenol, and triturate with the rest of the ingredients. Sift twice.

This is a valuable powder for those much afflicted with toothache and sore gums.

French Dentifrice

Pulv. camphoræ	℥xvj.
Cretæ præcipitat.	lb. v.
Carmin.	ʒiss.
Ol. rosæ virgin.	ʒij.

M.

This should be passed through a No. 160 drum sieve after being thoroughly mixed. To bring out the beautiful colour the dentifrice should be passed through the sieve many times. It is an elegant preparation when properly made.

Indian Dentifrice

Pulv. oss. sepiæ	℥ij.
Pulv. iridis flor.	℥ij.
Pulv. myrrhæ	℥ss.
Cretæ præcipitat.	℥viij.
Otto rosæ	♏xv.

Mix intimately and sift three times.

Havana Don's Dentifrice

Potass. permang.	gr. x.
Thymol.	gr. x.
Camphor.	gr. xx.
Pulv. pumicis	℥ij.
Cretæ præcip.	℥xvj.
Pulv. boracis	℥ij.
Extrait reseda	q.s.

Rub the thymol and camphor until liquid, then add the chalk. Mix the permanganate with the pumice, then incorporate all the ingredients, and sift.

Imperial Tooth-powder

Pulv. iridis	℥ss.
Pulv. oss. sepiæ	℥ss.
Pulv. sapon. alb.	℥j.
Cretæ præcipitat.	℥viij.
Liq. carmini amm.	ʒj.
Ol. canangæ odorat.	♏v.
Otto rosæ	♏v.

Mix the chalk with the colouring by trituration, sift, and set in a warm place until dry. Mix the soap, cuttlefish, and orris; to this add the perfumes, then the coloured chalk. Finally sift three or four times.

Myrrh Dentifrice

Precipitated chalk	℥iv.
Powdered myrrh	℥ss.
Powdered soap	℥ss.
Powdered orris	℥j.
Oil of peppermint	♏x.

Mix and sift.

O.K. Dentifrice

Pulv. sapon. alb.	℥ss.
Pulv. oss. sepiæ	℥ss.
Pulv. myrrhæ	℥ss.
Cretæ præcipitat.	℥iv.
Ol. menthæ pip.	♏v.

M.S.A.

Nasmyth's Tooth-powder

Rose-pink	ʒj.
Powdered orris	℥ij.
Precipitated chalk	℥viij.
Otto of rose	♏x.

Triturate the otto and rose-pink with an ounce of chalk for ten minutes, add the rest of the ingredients, and sift four times.

(Another Formula)

Cretæ præcipitat.	℥xvj.
Cretæ præparat.	℥xvj.
Pulv. iridis	℥viij.
Terræ rosæ	℥ij.

Mix and sift three times.

The second formula is the original of Mr. Nasmyth, an Edinburgh dentist, whose name is frequently spelled Naysmith and Naismith. Both of the formulas are, however, commonly in use in Scotland. It is preferred without otto. The mixing of the rose-pink with the chalk should be intimate, five or six siftings being none too many.

Oriental Dentifrice

Precipitated chalk	℥x.
Rose-pink	℥ivss.
Armenian bole	℥iiss.
Powdered orris-root	℥ij.
Powdered cinchona	℥j.
Powdered cassia	℥j.
Powdered myrrh	℥ss.
Oil of lavender	ʒj.
Essence of musk	♏xx.
Otto of rose	♏j.
Oil of neroli	♏j.

Mix and sift.

Peerless Dentifrice

Precipitated chalk	℥ij.
Carbonate of magnesia	℥ss.
Borax	ʒss.
Bicarbonate of soda	℥ss.
Orris-root	ʒij.
Thymol	gr. ij.
Camphor	gr. v.
Oil of peppermint	♏v.
Oil of cloves	♏ij.
Oil of lemon	♏ij.
Oil of eucalyptus	♏ij.
Creosote	♏j.

Dissolve the thymol and camphor in spirit and add to the previously well-mixed powders; then add the rest of the ingredients and sift three times.

Peruvian Dentifrice

I

Pulv. oss. sepiæ	℥iv.
Pulv. cinchon. rub.	℥j.
Pulv. sapon. alb.	℥j.
Pulv. cassiæ	℥ss.
Pulv. camphoræ	℥ss.
Cretæ præcipitat.	℥viij.
Ol. lavandulæ	ʒss.
Ess. moschi	ʒss.
Otto rosæ	♏v.

Mix thoroughly well and sift.

II

Pulv. cinchon. rub.	℥ij.
Pulv. potass. chlorat.	℥ij.
Pulv. lapidis pumic.	℥ij.
Cretæ præcip.	℥ij.
Pulv. krameriæ	℥j.
Pulv. sapon. alb.	℥iij.
Ol. menthæ pip.	ʒiss.

M.S.A.

The second Peruvian Dentifrice is an excellent one for use by those who are taking mercurial medicines. It has been found to have a decidedly beneficial effect upon the teeth, which in such circumstances are apt to become loose.

Quinine Dentifrice

Pulv. rad. iridis flor.	℥xij.
Pulv. cretæ præcipitat.	℥xxxvj.
Pulv. oss. sepiæ	℥iij.
Ol. rosæ virgin.	♏lxxx.
Quininæ sulphatis	ʒij.
Pulv. saponis hispan. (fresh)	℥ij.
Ol. cinnamomi	♏lxxv.

All the powders to be finely levigated and mixed in the above order, the oils being intimately mixed before passing the powder through a fine sieve three times.

Vian's Tooth-powder

Magnesiæ carb. pond.	℥iss.
Cretæ præcipitat.	℥iss.
Pulv. sodii chloridi	℥ss.
Ol. anisi stellat.	♏x.

M.S.A.

Rhatany Dentifrice

Pulv. iridis flor.	℥vj.
Pulv. oss. sepiæ	℥vj.
Pulv. cretæ præcip.	℥xxiv.
Pulv. krameriæ	℥ix.
Magnes. carb. pond.	℥vj.
Carmin.	ʒiss.
Pulv. boracis	ʒiij.
Pulv. antimonialis	ʒvj.
Ol. rosæ virgin.	gtt. xxiv.
Ol. neroli	gtt. xvj.
Ol. cedrat.	gtt. viij.
Ol. cinnamom.	gtt. viij.
Ol. caryoph.	gtt. viij.
Ol. lavand. ang.	gtt. iv.
Ol. pimentæ	gtt. iv.
Tr. myrrhæ	ʒvj.
Extrait violæ	ʒvj.

Mix well and pass through a fine drum sieve twenty times.

This is a superior preparation, which has been retailed at 6*d.* per oz.

The above formula for Quinine Dentifrice was formerly in the possession of a West-end London chemist, now dead. It was a prescription of the late Prince Consort's dentist, and was used by him. It also has an association with Lord Byron in so far as his daughter Ada, Countess of Lovelace, was in the habit of buying it half-a-dozen boxes at a time. It was put up in turned wood boxes, and labelled with the prescriber's name, and there were many honourable associations in connection with it. The powder may be coloured with carmine, but it is much nicer uncoloured. To sell as a special dentifrice, at 1*s.* 6*d.* per box, or 2*s.* 6*d.* per 2-oz. globe-stoppered bottle.

Saccharin Tooth-powders

I

Carmine	ʒss.
Saccharin	gr. xxiv.
Magnesium carbonate (heavy)	℥iv.
Cuttlefish-bone	℥viij.
Otto of rose	♏x.

Mix thoroughly.

II

Saccharini	gr. iij.
Pulv. calaminæ	gr. xxx.
Cretæ præcipitat.	℥iss.
Ol. menthæ pip.	gtt. x.

M.

Saponaceous Tooth-powders.—In addition to those already given, we arrange the following under the name by which they are sold.

I

Pulv. sapon. alb.	℥j.
Pulv. iridis	℥ij.
Cretæ præcip.	℥v.
Ol. geranii	♏x.

Triturate well and sift five times.

II

Pulv. sapon. alb.	ʒij.
Pulv. iridis	℥ss.
Sodæ bibor.	ʒij.
Cretæ præcip.	℥ij.
Ol. caryoph.	♏v.
Ol. lavand.	♏x.
Otto rosæ	♏v.

M.

III

Pulv. sapon. alb.	ʒij.
Pulv. iridis	℥ss.
Sodæ bicarb.	ʒij.
Cretæ præcip.	℥ij.

Mix and add

Acidi carbol.	ʒj.
Ol. eucalypt.	ʒij.

M.

Note.—Only for use in special cases where a powerful antiseptic is necessary.

IV

Cretæ præcipitat.	℥xij.
Magnes. carb. pond.	℥iij.
Pulv. sapon. alb.	℥vj.
Ol. geranii	ʒss.
Ol. origani	♏x.

Mix the chalk and magnesia with the oils in a mortar, then add the soap. Again triturate and sift four times.

V

Mr. G. H. Harding's Prescription

Pulv. cretæ præcip.	℥j.
Pulv. sod. bicarb.	ʒj.
Pulv. iridis	ʒij.
Pulv. boracis	ʒij.
Pulv. sapon. hisp.	ʒj.
Pulv. terræ rosæ	ʒj.
Ol. rosæ	♏v.

Triturate well and sift.

VI

White-rose Saponaceous Dentifrice

Powdered white Castile soap	℥iv.
Powdered orris-root	℥iv.
Heavy carbonate of magnesia	℥viij.
Precipitated chalk	℥xvj.
Otto of rose	ʒss.

Triturate the otto with 1 oz. of the chalk before adding the rest of the powders; then sift three times.

VII

Smokers' Tooth-powder

Menthol.	gr. iij.
Thymol.	gr. x.
Camphor.	gr. x.
Acid. salicylic.	ʒss.
Pulv. oss. sepiæ	ʒij.
Pulv. sapon. alb.	ʒij.
Cretæ præcip.	℥ij.
Otto rosæ	gtt. iv.

Mix the first three ingredients together in a mortar, add the chalk and the other ingredients, triturating ten minutes before sifting.

Talc Tooth-powder

Powdered talc	℥ij.
Powdered cochineal	ʒij.
Powdered cream of tartar	ʒj.
Powdered alum	ʒj.
Oil of peppermint	gtt. v.

Mix.

Carmine ℈ss. may be used instead of cochineal, omitting the alum.

Teaberry Dentifrice

Ol. gaultheriæ	♏x.
Pulv. sapon. alb.	ʒj.
Cretæ præcip. ad	℥iss.

M. Ft. pulv.

This dentifrice is very popular in the U.S. Sold in wide-mouthed glass-stoppered bottle at 1*s*. 6*d*.

Tannin Dentifrice

The following is a French recipe for a preparation which is useful as a tooth-powder when the gums are spongy:—

Sugar of milk	℥xxx.
Carmine	ʒiiss.
Pure tannin	℥ss.
Oil of peppermint	♏xij.
Oil of anise	♏xij.
Oil of orange-flowers	♏vj.

Triturate the carmine with the tannin, add the sugar of milk gradually, and finally the oils.

Thymol Tooth-powder

I

Thymol	ʒss.
Camphor	ʒj.

Rub together until melted, then add

Precipitated chalk	℥xxx.
Powdered soap	℥x.
Saccharin	gr. xv.
Vanillin	gr. vj.
Otto of rose	a sufficiency

Mix well and sift.

II

Thymol	ʒss.
Spt. rectificat.	ʒiij.
Cretæ præcip.	lb. iij.
Mag. carb. pond.	℥iss.
Pulv. iridis	℥v.
Pulv. sapon. alb.	℥xij.
Ol. menthæ pip.	ʒj.
Ol. caryoph.	ʒss.
Ol. limon.	ʒss.
Ol. eucalypti	ʒss.

Mix as No. I., dissolving the thymol in the spirit.

Thymol in powder is exceedingly irritating in dentifrices. We have found that the best way of treating it is to mix with camphor to liquefy it, and then to triturate well with the chalk. Probably there is no more efficient deodorant than thymol, and with the addition of a little menthol a very refreshing dentifrice is obtained.

Miscellaneous Formulas.—The following table was compiled by the late Professor Bedford, of New York, from private prescriptions. They are a good selection of plain powders to which any compounder may add what perfume he pleases. The figures may be taken to mean drachms or ounces.

—	I	II	III	IV	V	VI	VII	VIII
Precipitated chalk	16	24	32	12	12	—	16	32
Cuttlebone	16	6	—	—	4	16	—	16
Orris-root	16	6	6	8	8	16	8	16
Rose-pink	6	—	2	—	4	—	—	—
White soap	4	2	—	—	—	—	6	8
Myrrh	—	—	6	4	—	—	—	—
Cinchona	—	—	—	8	—	—	—	—
Sugar	—	—	—	—	4	—	8	—
Starch	—	—	—	—	—	—	16	—
Borax	—	—	—	—	—	—	2	—
Charcoal	—	—	—	—	—	16	—	—
Bicarbonate of soda	—	—	—	—	—	—	—	8

Mr. E. M. Tod's Prescription

Cretæ præcipitat.	℥x.
Magnes. carb. pond.	℥iij.
Pulv. iridis	℥j.
Pulv. sacch. alb.	℥j.
Acid. tannic.	ʒj.
Pulv. cort. quercûs	℈ss.
Carmini	℈ss.
Pulv. saponis alb.	℥ss.
Otto rosæ	♏xl.
Ol. limonis	♏v.

M.S.A.

White's Tooth-powder

Cretæ præcipitat.	℥xx.
Potass. bitart.	℥iss.
Terræ rosæ	℥iv.
Pulv. iridis	℥vj.
Pulv. pumicis	℥j.
Pulv. myrrhæ	℥ij.
Pulv. pyrethri	℥ij
Pulv. potass. nitrat.	℥ij.
Pulv. boracis	℥ss.
Ol. verbenæ	♏xv.
Ol. caryoph.	♏xv.
Ol. lavand.	♏xv.
Ol. neroli	♏xx.
Ol. limon.	ʒss.

Triturate the oils with the rose-pink, add the rest of the ingredients gradually, and sift four times.

Mr. Small's Prescriptions

(For Adults)

Quininæ sulphat.	gr. ij.
Potass. chlor.	ʒiss.
Cretæ præcip.	℥j.
Magnes. carb. pond.	℥j.
Otto rosæ	♏iij.
Carmin.	gr. iij.

M.

(For Children)

Pulv. cinchon.	ʒij.
Potass. chlorat.	ʒss.
Pulv. iridis flor.	℥ss.
Cretæ præcip.	℥j.
Otto rosæ	♏iij.

M.

(Another)

Quininæ sulphat.	gr. viij.
Pulv. potass. chlorat.	℥j.
Pulv. oss. sepiæ	℥j.
Pulv. carmin.	gr. xcvj.
Cretæ præcipitat.	℥xvj.
Otto rosæ	♏xv.

Dissolve the otto in Ess. Jockey Club ʒvj. and add to the powders previously mixed intimately; then sift several times.

Tooth-powder Perfumes

It is a mistake to put too much perfume in a tooth-powder. Our experience in regard to otto of rose, for example, is that a minim to the ounce is not only quite enough, but that more is decidedly bad. To get the fine aroma of the rose in perfection the otto should be triturated with the chalk (ʒj. for each minim of otto) for at least ten minutes, and after the whole of the ingredients are added trituration should be continued for a few minutes before the powder is sifted. The oftener it is sifted the better. The same applies to other perfumes. Subjoined are good general perfumes :—

I

Ol. bergamottæ	ʒj.
Ol. limonis	ʒj.
Ol. lavandulæ	ʒj.
Ol. aurantii	ʒij.
Ess. moschi	ʒij.

M.

II

Ol. limonis	ʒvj.
Ol. bergamottæ	ʒiij.
Ol. aurantii	ʒiij.
Ol. neroli	ʒj.

M.

Tooth-powder Colourings

Pink or Red

I

Carmini	℥ss.
Liq. ammon.	℥viij.
Aq. ad	℥xvj.

Triturate the carmine with the ammonia, gradually add the water, and filter.

II

Brazil-wood	℥ij.
Water	Oij.

Boil for ten minutes and filter. To the filtrate add 2 dr. of alum dissolved in 1 oz. of hot water. Collect the lake which is precipitated, dry, and powder.

Brown

Liq. ammoniæ	ʒj.
Tr. catechu	℥vj.

M.

Golden or Yellow

Tincture of saffron or an aqueous solution of azo-orange dye. Tincture of turmeric is not nice.

Green

Add a few drops of solution of aniline blue to the yellow-coloured powder.

Violet

A spirituous solution of aniline violet is the best colour.

In using carmine extemporaneously, for each pound of the powder take from a scruple to a drachm of carmine, according to the colour desired; rub with an ounce or two of chalk, and damp the powder with 1 to 3 dr. of solution of ammonia; stir well, add the rest of the powder, and sift several times.

PASTE DENTIFRICES

Tradition long ruled the manufacture of tooth-pastes, so that they were virtually a mixture of a tooth-powder with a sweet excipient, such as honey or simple syrup with a little glycerine to keep it from hardening, or even glycerine itself. These are all more or less objectionable methods. Thus the saccharine excipients are apt to ferment, and once this happens all sorts of changes ensue, including decomposition of the chalk or any other carbonate which may be present. Glycerine alone attracts moisture too greedily, and should always be used diluted with three times its volume of water. So employed it is an ideal excipient.

Any of the tooth-powders in the preceding section of this chapter (with the exceptions to be noted) may be converted into pastes with the following

Liquid Excipient.—Dissolve 8 gr. of saccharin in 1 oz. of rectified spirit and add 3 oz. of glycerine and 9 oz. of water, in which 2 dr. of gelatine has previously been dissolved.

This excipient, or any excipient containing glycerine, should not be used with powders of which borax and any carbonate are constituents, because glycerine reacts with borax, liberating boric acid (in presence of water), which in its turn acts upon the carbonate, setting free carbonic-acid gas. The paste then becomes spongy.

Powders containing soap should be made rather to the thin side at first, because the soap gradually gets into solution, and the paste in consequence stiffens with age.

Areca Tooth-paste

I

Cretæ præcipitat.	℥xvj.
Terræ rosæ	℥vj.
Pulv. arecæ	℥iij.
Pulv. sacchar. alb.	℥iij.
Ol. caryophyll.	ʒss.
Ol. cinnamom.	♏xx.
Glycerini	℥ij.
Aq. rosæ	q.s.

Mix the powders, sift through a No. 140 sieve, sprinkle on the perfumes, and sift through a No. 40 sieve; then mass. This method to be followed when general directions only are given.

II

Cretæ præcipitat.	℥vj.
Pulv. oss. sepiæ	℥ss.
Pulv. arecæ	℥iss.
Ol. lavandul.	♏x.
Ol. cinnamom.	♏vj.
Otto rosæ	♏iij.
Mellis	℥ij.
Glycerini	℥ss.
Aq. rosæ	q.s.

M.S.A.

Antiseptic Dental Cream

Precipitated chalk	ʒv.
Powdered white soap	ʒj.
Salicylate of sodium	gr. xx.
Oil of rose-geranium	♏iv.
Oil of wintergreen	♏iij.
Solution of carmine	♏ij.
Glycerine (4) } Water (1) }	a sufficiency

Triturate the powders, add the oils, and continue trituration until well mixed; then make into a paste of the desired consistency with glycerine and water mixed in the proportions given, add the solution of carmine, and rub all together until a smooth, creamy paste results.

Carbolic Tooth-paste

I

Mellis	℥xvj.
Glycerini	℥iv.

Melt together and add the following, previously mixed and sifted:—

Cretæ præcipit.	℥xvj.
Pulv. iridis	℥iv.
Carmini	ʒj.
Acid. carbol.	ʒss.
Ol. gaultheriæ	♏xx.
Ol. cinnamom.	♏v.
Spt. rectificat.	℥ss.

II

Precipitated silica	℥vj.
Carmine	℈j.
Powdered orris	℥j.
Carbolic acid	ʒss.
Oil of wintergreen	♏viij.
Oil of peppermint	♏v.
Saccharin	gr. ij.
Glycerine	ʒvj.
Rose-water	a sufficiency

Triturate the carmine and the saccharin with the silica and orris, and sift; add the other ingredients and make into a paste.

Charcoal Tooth-paste

Pulv. carbon. subtilis	℥iv.
Cretæ præcip.	℥ij.
Glycerini	℥j.
Ol. rosæ virg.	♏vj.
Mellis	q.s.

Mix the powders, add the otto, rub well; then add the glycerine and sufficient honey to make a paste.

Coca Tooth-paste

French chalk	℥iij.
Powdered soap	℥j.
Powdered cuttlefish-bone	℥ss.
Tincture of coca	℥ss.
Solution of carmine	ʒj.
Oil of peppermint	♏x.
Oil of ylang-ylang	♏v.
Glycerine	℥j.
Rose-water	a sufficiency

Mix the tincture with the oils and add to the powders, coloured with the carmine, and make into a paste.

Creta Cream

Cretæ præcipitat.	℥vj.
Magnes. carb. pond.	℥ss.
Pulv. sapon. alb.	℈iv.
Ol. caryophyll.	♏ij.
Ol. cassiæ	♏ij.
Ol. aurantii	♏ij.
Ol. rosæ geranii	♏vj.

Mix thoroughly and sift, then make into a paste with

Glycerini	℥j.
Aq. rosæ	q.s.

Cherry Tooth-pastes

I

Pulv. iridis flor.	℥j.
Pulv. cocci cacti	ʒj.
Pulv. alum. ust.	ʒij.
Pulv. potass. bitart.	℥ss.
Pulv. cretæ rub.	℥ij.
Pulv. oss. sepiæ	℥j.

Mix the powders intimately and add 4 oz. of red-currant jelly, bringing the paste down to a suitable consistency with syrup of mulberry. The following perfume may be used:—

Ol. cassiæ	♏v.
Ol. ros. geran.	♏v.
Ol. caryoph.	♏iij.

II

Precipitated chalk	lb. ij.
Rose-pink	lb. j.
Powdered orris	℥iv.
Glycerine	℥iv.
Honey	℥viij.
English oil of lavender	ʒij.
Oil of cinnamon	ʒss.
Oil of bergamot	ʒij.

Mix and sift the powders and add the rest of the ingredients, beating up thoroughly well. Set aside for a month, and if tough add a little water.

III

Pulv. pumicis	℥ij.
Pulv. iridis	℥ij.
Pulv. myrrhæ	℥ss.
Ol. limonis	ʒj.
Ol. caryoph.	ʒss.
Otto rosæ	♏v.
Liq. cocci	q.s.
Mellis	℥ij.
Aq. glycerinatæ	q.s.

M.S.A.

The first of these formulas is the old-fashioned article in which the cochineal colour is converted into a lake during the compounding. It is not nice at all.

IV

Carmini	gr. xliv.
Pulv. iridis	℥j.
Magnes. carb. lev.	℥j.
Cretæ præcipit.	℥viij.
Ol. caryophyll.	ʒss.
Ol. rosæ geran.	♏xvj.
Ol. gaultheriæ	♏viij.
Ol. menth. pip.	♏x.
Glycerini	℥j.
Syrupi	℥j.
Aq. rosæ	q.s.

Triturate the carmine with the essential oils and add the chalk gradually, so that the powder may be uniformly coloured; then add the orris and magnesia. Sift. Now make the sifted powder into a paste with the glycerine, syrup, and sufficient water.

Saponaceous Cherry Paste

Melt together

Sarg's liquid glycerine soap	℥xij.
Curd soap	ʒss.
Salicylic acid	ʒss.

Pour into a hot mortar, and incorporate

Precipitated chalk	℥xxvj.
Solution of carmine	a sufficiency
Oil of wintergreen	♏xiv.

Beat thoroughly well.

White Cherry Dentifrice

Cretæ præcipitat.	℥vj.
Cretæ præparat.	℥vj.
Pulv. oss. sepiæ	℥ss.
Pulv. iridis	℥j.
Pulv. pumicis	℥j.
Ol. caryophyll.	ʒss.
Ol. cinnamomi	♏x.
Ol. bergamottæ	♏x.
Ol. neroli	♏x.
Ol. aurantii	♏x.
Ol. cedrat.	♏x.
Glycerini et aquæ rosæ āā	q.s. ut fiat pasta

Damask Rose Tooth-paste

Cretæ præcipitat.	℥xij.
Pulv. iridis	℥x.
Ol. caryoph.	ʒss.
Otto rosæ	ʒss.
Ol. menth. pip.	♏x.
Ol. lavand.	♏x.
Liquor. cocci	℥j.
Glycerini	℥iij.
Elixir. saccharini	℥iss
Aq.	q.s.

M.S.A.

Dentalba

Carmine	℈j.
Solution of ammonia	ʒss.

Triturate in a mortar and add gradually

Precipitated chalk	℥xij.
Prepared chalk	℥vj.
Orris-powder	℥vj.

Sift twice and add the following mixture:—

Vanillin	gr. ij.
Coumarin	gr. j.
Otto of rose	♏xij.
Oil of cloves	♏xij.
Tincture of benzoin (simp.)	ʒiij.

Mass with

Glycerine	℥ij.
Rose-water	a sufficiency

English Tooth-paste

Cretæ præcipitat.	℥xx.
Pulv. oss. sepiæ	℥v.
Pulv. pumicis	℥ij.
Pulv. iridis	℥x.
Pulv. caryophyll.	℥iij.
Pulv. cinnamomi	℥iij.
Liq. carmini (Ex. Phar.)	℥j.
Ol. caryophylli	ʒiij.
Otto rosæ	ʒss.
Mellis	℥x.
Glycerini	℥iv.
Aq. chloroformi	q.s.

M.S.A.

Eucalyptus Tooth-paste

Precipitated chalk	℥iij.
French chalk	℥ij.
Powdered soap	℥iss.
Arrowroot	℥iss.
Solution of carmine	ʒiss.
Oil of eucalyptus	ʒss.
Oil of peppermint	♏xv.
Oil of rose-geranium	♏xv.
Oil of cloves	♏v.
Oil of anise	♏v.
Glycerine	℥iss.
Chloroform-water	a sufficiency

Make a paste.

Floral Dentine

Cretæ præcipitat.	℥x.
Pulv. iridis	℥v.
Pulv. oss. sepiæ	℥iiiss.
Liq. carmini	ʒij.
Ol. limonis	ʒij.
Ol. rosæ geran.	ʒj.
Mellis	℥iij.
Glycerini	℥j.
Aq. menthæ pip.	q.s.

M.S.A.

Myrrhine Tooth-paste

Precipitated chalk	℥vj.
Powdered myrrh	ʒvj.
Arrowroot	℥ss.
Oil of cinnamon	ʒss.

Glycerine and chloroform-water, of each a sufficiency to make a paste.

Odontine

Carmine	ʒss.
White soap	℥iij.
Proof spirit	℥iij.

Dissolve by the heat of a water-bath and add to the following:—

Precipitated chalk	℥vj.
French chalk	℥iij.
Oil of peppermint	♏xl.
Oil of cinnamon	♏x.
Oil of geranium	♏xv.
Glycerine	℥iss.
Proof spirit	a sufficiency

Make a paste.

Harlan's Tooth-paste

Cretæ præcipitat.	℥ij.
Pulv. sacch. alb.	℥j.
Pulv. boracis	℥j.
Pulv. iridis	ʒij.
Pulv. sapon. alb.	℥ss.
Pulv. oss. sepiæ	ʒij.
Pulv. myrrhæ	℥j.
Carmini	gr. x.
Ol. gaultheriæ	ʒj.
Glycerini	℥j.
Mellis	℥j.

Mix all the powders except the carmine, which with borax ℈j. dissolve in a little water and add to the powders along with the oil; then make into a paste, using as much rose-water as is necessary. The quantity of wintergreen is excessive for English taste.

Red Rose Tooth-paste

Cretæ præcipitat.	℥iv.
Magnes. carb. pond.	℥iv.
Pulv. iridis	℥iv.
Pulv. pumicis	℥iv.
Pulv. oss. sepiæ	℥iv.
Glycerini	℥iij.
Mellis	℥viij.
Aq. rosæ	℥iv.
Carmini	ʒij.
Liq. ammon.	℥ss.

Rub the carmine and ammonia together in a mortar, then add the liquids in the order given, and finally the powders, and perfume with otto rosæ ʒj. and ol. ros. geranii ʒss.

The pumice may be omitted and replaced by precipitated chalk.

Saponaceous

I

To each ounce of any white saponaceous tooth-powder add elixir. saccharini ♏x., and glycerini ʒiss., and make into a paste with a sufficiency of water.

II

Powdered pumice	℥j.
Powdered cuttlefish-bone	℥iss.
Powdered myrrh	℥iij.
Powdered orris-root	℥iiiss.
Precipitated chalk	℥vj.
Curd soap	℥viij.
Glycerine	℥xij.
Rose-water	℥x.
Otto of rose	ʒj.
Oil of cloves	ʒij.

Shred the soap, mix it with the glycerine, and heat on a water-bath till uniform; then add the water and mix with the powders, finally adding the perfume.

Vigier's Tooth-paste

French chalk	℥vj.
Cream of tartar	℥ss.
Cochineal-powder	℥ss.
Glycerine	℥v.
Honey	℥x.

Mix.

Vilbliss's Cream Dentifrice

Magnes. carb. pond.	℥ij.
Pulv. boracis	℥iss.
Cretæ præcipitat.	℥j.
Pulv. sapon. alb.	ʒvj.
Otto rosæ	♏ij.
Ol. iridis	♏ij.
Ol. caryophyll.	♏ij.
Ol. rosæ geranii	♏ij.
Liq. carmini	♏x.
Mellis	℥iss.
Aq. rosæ	q.s.

Mix thoroughly to make a thin paste, allowing to stand in the mortar a few days for stirring.

The Nameless

To the following the retailer may apply any name he chooses :—

I

Carmini	ʒss.
Cretæ præcipitat.	℥viij.
Pulv. iridis	℥iij.
Pulv. saponis	℥v.
Ol. cinnamomi	♏x.
Ol. menth. pip.	ʒij.
Glycerini	
Aquæ rosæ	āā q.s. ut fiat pasta

The carmine should be dissolved in a sufficiency of ammonia solution.

II

Pulv. saponis	℥j.
Magnes. carb. pond.	℥ij.
Cretæ præcip.	℥vj,
Ol. neroli	♏xx,
Glycerini	℥ij.
Aq. flor. aurant.	q.s.

Fiat pasta.

TOOTH SOAPS AND TABLETS

Tooth-soaps have within recent years become exceedingly popular, but their manufacture is almost confined to soap-makers, because a soap-stamping mould is required in making them, and it is not profitable for the retailer to invest in one of these. The basis of tooth-soaps consists of a mixture of any tooth-powder desired with its own weight, or more, of neutral soda soap mixed together while the latter is hot and pasty. It is then dried, milled, cut into pieces suitable for the mould, and stamped. In a retail way Tooth-soap may be made by shredding 1 lb. of the best primrose soap and placing it in a basin with its own weight of water and 1 oz. of glycerine. Heat gently until the soap is dissolved, and the contents of the basin weigh 24 oz. ; transfer this to a large warm mortar, and work in 1 lb. of tooth-powder by assiduously beating. Do not cease beating up until the whole of the ingredients are intimately mixed and a uniform mass is obtained. As the consistency of soap varies the quantity of powder used must be adjusted to suit, more being added if the mass is too soft, but if too hard proof spirit should be used to soften. Next transfer the mass to a large marble slab, and flatten it with a rolling-pin aided by a sprinkling of soap powder. Set aside in a warm place—about 80° F.—and roll every day until it shrinks but little ; then cut into suitable-sized cakes.

Tooth-soaps should be well charged with aromatic oils, at least 10 minims to the ounce being required to cover the soapy taste and to make them pleasant in use. It should also be remembered that when they are used comparatively little gets upon the tooth-brush, so that if less than the 10 minims of oils is contained in each ounce of the soap there is but slight antisepsis.

Tooth-tablets are tooth-powders, generally without soap, made into a stiff paste with proof spirit, aided by compound tragacanth powder. Two drachms of the latter to a pound of tooth-powder suffices. The paste is moulded into suitable shapes, and the cakes dried. They crumble when pressed in the palm of the hand. Lyon's tooth-tablets are the forerunners of such preparations.

Solid Tooth-soap

Cretæ præcipitat. . .	℥j.
Carmin.	℈j.
Liq. ammon. . . .	ʒj.
Pulv. saponis alb. . .	℥ij.
Ol. menthæ pip. . .	ʒss.
Spt. rectificat. . .	ʒiij.

Make into a paste and mould.

A softer soap may be made by using equal parts of spirit and glycerine.

Liquid Tooth-soap

Lin. saponis rect. . .	℥iij.
Tr. myrrhæ . . .	℥ss.
Glycerini . . .	ʒss.
Ol. menth. pip. . .	♏x.
Liq. carmin. . . .	q.s.

M.

LIQUID DENTIFRICES

Custom, rather than the greater utility, has made solid dentifrices to be preferred by the multitude. As a matter of fact, the teeth do not require daily use of solid dentifrices, for liquid preparations give that amount of assistance to the brush which ensures the removal of matter adhering to the teeth, while the detergent and antiseptic properties of the liquid dentifrice provide that refreshing influence which is so much desired. Solid dentifrices may be injurious ; the liquid preparations never are.

For these reasons alone the sale of liquid dentifrices should be encouraged ; in addition they are more profitable and more convenient in use. A distinction should be noted between Liquid Dentifrices and Mouth-washes, strictly so called. The former are always used with the brush, while the latter seldom are, but are generally used in mixture with water for hardening the gums or refreshing the mouth after smoking. We group these preparations separately.

In this section we place first those liquid dentifrices which are foaming or saponaceous. Quillaia bark is the source of the frothing character in the former, and soap in the latter case. Quillaia contains a large amount of saponin, a principle contained in many other vegetable substances, *e.g.* senega, tea-seed cake, and soap-nuts ; but none is so convenient or suitable as quillaia.

Quillaia bark is exceedingly tough and difficult to powder, so that it should be bought coarsely powdered. It has been determined that a spirituous menstruum containing not more than 25 per cent. of alcohol is most suitable for exhausting the bark and for preserving the saponin. If a colourless preparation is desired the tincture of quillaia must be shaken with bone-black in small pieces, 1 oz. to each pint of tincture ; then filtered. As a rule liquid dentifrices are coloured pink (cochineal and fuchsine are good colourings) or golden (with saffron). Green is not a desirable colour for dentifrices. Sometimes these coloured dentifrices become bleached, but this is due to exposure to intense light.

Tincture of Quillaia for use in liquid dentifrices is made by macerating 4 oz. of the coarsely powdered bark in a mixture of rectified spirit 4 oz. and water 16 oz. for six days, and filtering ; or it may be made by percolation. The marc yields an ounce or two on pressure, but it should not be further washed with menstruum. This tincture is to be used in the first formula. The other formulas give abundant variety of flavour and appearance.

I

Ol. santal.	♏iv.
Extrait violæ	℥ss.
Ess. vanillæ	℥ss.
Tr. iridis	℥ij.
Tannin.	ʒss.
Spt. rectificat.	℥viij.

Dissolve and add

Ras. santal. rub.	℥j.
Glycerini	℥j.
Tr. quillaiæ	℥xvj.
Aq. rosæ ad	Oij.

Macerate for a week and filter.

II

Quillaiæ	℥j.
Spt. rectificat.	℥vij.
Aquæ	℥x.

Macerate for a week, filter, and add

Cocci cacti	gr. xvj.
Ol. gaultheriæ	ʒj.
Glycerini	℥iv.
Aq. menthæ pip.	℥viij.

Previously macerated for a week. Filter the mixture.

Rosebery Dentifrice

Quillaia	℥ij.
Glycerine	℥iss.
Salicylate of sodium	ʒij.
Oil of bergamot	ʒss.
Oil of wintergreen	ʒss.
Oil of cloves	♏viij.
Solution of carmine	ʒj. (or q.s.)
Rectified spirit	℥vj.
Rose-water to	℥xvj.

Macerate the quillaia with 5 oz. spirit, the water, and glycerine for seven days and add the oils dissolved in the remaining ounce of spirit; strain and press. To the liquor add the salicylate of sodium and sufficient solution of carmine to colour. Shake thoroughly and filter through a wet filter-paper sprinkled with talc, returning the filtrate until it runs clear, and pour enough proof spirit through the filter to make 16 oz.

Foaming Carbolic Dentifrice

Quillaia, in coarse powder	℥iv.
Glycerine	℥iij.
Rectified spirit	℥v.

Macerate for four days and add

Carbolic acid, in crystals	ʒj.
Oil of rose-geranium	♏x.
Oil of cloves	♏x.
Otto of rose	♏x.
Oil of cinnamon	♏x.
Tincture of rhatany	℥iss.
Rose-water	℥xxx.

Macerate for another four days and filter.

For tincture of rhatany ½ oz. of tincture of cochineal may be substituted.

Rose Dentoline

Quillaia	℥ij.
Glycerine	℥ij.
Eau de Cologne	℥viij.
Rose-water	℥xxxij.
Solution of carmine	ʒiij.
Essence of vanilla	℥ss.
Oil of wintergreen	♏xx.
Oil of cloves	♏x.

Dissolve the oils and essence in the eau de Cologne, add the rose-water, and in the whole digest the quillaia for two weeks, shaking occasionally. Finally add the glycerine and colouring solution, and filter.

The Carmine Solution is made by rubbing 1 dr. carmine with ½ oz. solution of ammonia till dissolved, then adding 3½ oz. water.

Liquid Odontine

Tr. quillaiæ	℥x.
Syr. aurantii	℥vj.
Ol. cassiæ	♏xx.
Ol. caryophyll.	♏vj.
Ol. lavand.	♏vj.
Ol. carui	♏xv.
Ol. gaultheriæ	♏x.
Ol. menth. pip.	♏xxx.
Ess. ananassæ	♏xxx.
Liq. cocci	ʒj.

M.

The following are suitable labels for the foregoing :—

LIQUID
DENTIFRICE
A Deliciously Flavoured
ANTISEPTIC TOOTH WASH
for General Use.

Directions.—To ensure clean White Teeth, and to effectually deodorise decayed parts, sprinkle a few drops on a wet tooth-brush and use morning and evening.

PREPARED BY
(*Name and Address*)

LIQUID
CARBOLIC DENTIFRICE
FOR
PRESERVING THE TEETH AND GUMS

The antiseptic and preservative properties of carbolic acid are so well known that to comment upon its virtues as a dentifrice would be superfluous. It is sufficient to say that this is an agreeable and perfectly safe preparation, possessing powerful antiseptic properties, and it is strongly recommended for cleansing and preserving the teeth and maintaining the gums in a healthy condition.

Directions for Use.—Sprinkle a few drops upon a wet tooth-brush and well brush the teeth in the usual manner.

These labels are given to exhibit suitable wording, rather than style of printing.

Any names may be applied to the following saponaceous liquid dentifrices :—

I

Cloves	℥j.
Cassia	℥ij.
Castile soap	℥ij.
Proof spirit	Oj.

Macerate for a week and add

Oil of cloves	ʒss.
Oil of orange	ʒj.
Tincture of benzoin	℥ij.
Tincture of rhatany	℥j.

Shake well and filter.

II

Curd soap	ʒv.
Oil of cassia	♏vj.
Oil of cloves	♏vj.
Oil of peppermint	♏x.
Oil of anise	♏xij.
Oil of lemon	♏xij.
Oil of wintergreen	♏xx.
Ess. Jockey Club	ʒij.
Solution of carmine	ʒss.
Rectified spirit	℥v.
Water	℥x.

Dissolve all the ingredients except the soap in the spirit. Dissolve the soap in the water. Mix the solutions, make up to 16 oz. with water, and filter after two days.

III

Castile soap	℥xij.
Carbonate of potash	℥iiss.
Powdered rhatany	℥j.
Glycerine	℥xxx.
Sugar	℥xxx.
Oil of wintergreen	ʒvj.
Oil of anise	ʒvj.
Oil of cinnamon	℥ss.
Oil of cloves	℥ss.
Oil of peppermint	℥ss.
Rectified spirit	Cong. j.
Water	a sufficiency

Put the soap in 1 gallon of cold water and add the carbonate of potash. Dissolve the oils in the S.V.R. Add the sugar, glycerine, and rhatany to 1 gallon of cold water, and to it add the soap solution and the oil mixture.

Lastly, add cold water to make 5 gallons. Shake daily for two weeks, then leave undisturbed for two weeks. Decant off the clear solution and filter the rest.

IV

White soap	℥iss.
Glycerine	℥iv.
Rectified spirit	℥vj.
Hot water	℥vj.
Oil of peppermint	♏xx.
Oil of wintergreen	♏xx.
Oil of cloves	♏x.
Essence of vanilla	℥ss.
Solution of carmine	a sufficiency

Dissolve the soap in the hot water, add the glycerine and essence of vanilla. Dissolve the oils in the S.V.R. Mix the two solutions, add the colour, allow to stand twenty-four hours, and filter through animal charcoal.

V

Thymol	gr. ij.
Carbolic acid	♏v.
Oil of sassafras	♏vj.
Oil of wintergreen	♏vj.
Oil of rose-geranium	♏vj.
Oil of eucalyptus	♏v.
Oil of calamus	♏v.
Oil of pumilio pine	♏xx.
Glycerine	℥ij.
Rectified spirit	℥ivss.
White Castile soap	℥ij.
Tincture of cudbear	a sufficiency
Distilled water to	℥xvj.

Dissolve the soap in 5 oz. of warm water. Dissolve the acid, thymol, and oils in the spirit, and add to the soap solution. Filter through paper sprinkled with calcium phosphate. Add the glycerine and mix.

VI. (Resembling Sozodont)

White soap	ʒv.
Glycerine	ʒv.
Water	℥iiss.

Mix and add the following solution:—

Oil of peppermint	♏xij
Oil of cinnamon	♏v.
Oil of cloves	♏v.
Oil of anise	♏x
Spirit	℥v.

In a few days filter.

VII. (Resembling Kalliodont)

White Castile soap	ʒix.
Glycerine	ʒix.
Syrup	℥iv.
Water	℥xxv.
Rectified spirit	℥xxv.
Tincture of cardamoms (1–20)	℥ss.
Tincture of snake-root	℥ss.
Oil of peppermint	♏xlv.
Oil of wintergreen	♏xlv.
Oil of cloves	♏x.
Oil of cassia	♏x.
Solution of carmine	a sufficiency

Mix the first four ingredients, dissolving the soap. Mix the remainder of the ingredients and pour in the aqueous solution. Colour with the carmine, set aside in a cool place for a week, and filter.

There are many other formulas for these saponaceous and quillaia dentifrices, but the foregoing are typical in regard to flavour. Both quillaia and soap solutions are apt to lose their foaming properties if they are weak in the essential constituents. It is, therefore, of advantage to note that the majority of the more popular foaming dentifrices are strong solutions of soap, such as No. v,

Unsaponaceous Dentifrices

Eau de Botot

(From Analysis of the Original)

I

Fruct. anisi stellati . .	℥ss.
Caryoph. . . .	℈iv.
Cinnamom. . . .	℈iv.
Ol. menth. pip. . .	♏xx.
Cocci cacti . . .	℈j.
Spt. rectificat. . .	℥vij.
Aq. rosæ ad . . .	℥xij.

Macerate for a week and filter.

II

Ol. menthæ pip. . .	ʒj.
Ol. caryoph. . . .	♏x.
Ol. cassiæ . . .	♏vj.
Ol. limonis . . .	♏vj.
Ol. anisi . . .	♏xx.
Rad. anchusæ . . .	ʒv.
Aq. destil. . . .	℥vj.
Spt. rectificat. . .	℥xx.

Macerate for a week and filter.

(Winkler's Formula)

Ol. menthæ pip. . .	♏v.
Tr. myrrhæ . . .	℥iv.
Tr. krameriæ . . .	℥iv.
Tr. cedri lig. . .	℥viij.

M.

Eau Dentifrice (Pierre's)

Star-anise . . .	℥vj.
Cochineal . . .	℥ss.
Rectified spirit . .	Oiiss.

Make a tincture by maceration and add

Oil of anise . . .	℥iss.
Oil of peppermint . .	℥ss.
Heliotropin . . .	gr. v.

Keep in a cool place for several weeks and filter.

Dentifrice-water

Thymol.	ʒj.
Ol. menthæ pip. . .	ʒj.
Ol. eucalypti . . .	ʒiss.
Ol. limonis . . .	ʒiss.
Chloroformi . . .	ʒv.
Glycerini . . .	℥j.
Spt. rectificat. ad . .	℥xv.

Colour the spirit with a small crystal of magenta dye and dissolve in it the thymol, oils, and chloroform, and add the glycerine last.

This is an excellent dentifrice-water, especially for those who smoke, or who are afflicted with fetid breath. A few drops of it should be used on a soft tooth-brush.

Elixir Dentifrice

Ol. cinnamom. . .	ʒj.
Ol. anisi . . .	ʒij.
Ol. caryoph. . . .	ʒij.
Ol. menth. pip. . .	℥j.
Tr. benz. simp. . .	℥j.
Tr. guaiaci . . .	℥j.
Tr. pyrethri . . .	℥j.
Liq. cocci . . .	℥iss.
Spt. rectificat. . . .	℥cxxv.

Mix and filter after a few hours.

Elixir de Rose pour les Dents

Ol. menth. pip. . .	♏lxxx.
Ol. caryoph. . . .	♏xv.
Ol. cinnam. . . .	♏xv.
Ol. anisi . . .	ʒj.
Liq. carmin. ammon. .	q.s.
Aq. destil. . . .	℥ij.
Spt. rectificat. . .	Oj.

Mix and filter.

Favourite Tooth-wash

Ol. menth. pip. . .	ʒss.
Ol. cinnamom. . .	♏xlv.
Ol. menthæ virid. . .	♏xv.
Ol. caryophylli . .	♏xv.
Tr. myrrhæ . . .	ʒj.
Tr. persionis (1–8) . .	ʒiij.
Spt. rectificat. ad . .	℥xvj.

M.

Saccharin Dentifrice

Saccharin. . . .	ʒss.
Ol. caryophyll. . .	ʒj.
Tr. myrrhæ . . .	ʒij.
Tr. benzoinæ simp. . .	℥j.
Tr. quininæ . . .	℥j.

M.

Menthol Dentifrice

Cochineal . . .	℥j.
Red-cinchona bark . .	℥j.
Canella-bark . . .	℥j.
Cloves	℥j.
Pellitory-root . . .	℥j.
Star-anise . . .	℥iij.
Rectified spirit . .	Cong. j.

Macerate for a week and add

Menthol . . .	℥ss.

Finally filter.

Ruby Cream

Menthol. . . .	℈ij.
Ol. caryoph. . . .	ʒiss.
Ol. menth. pip. . .	ʒiss.
Acid. boric. . . .	℥j.
Tr. myrrhæ . . .	℥iv.
Tr. persionis . . .	℥ij.
Spt. rect. ad . . .	℥xxxvj.

M.S.A.

Salol Dentifrice

(Like Odol)

Salol	ʒiiss.
Saccharin . . .	gr. xij.
Bicarbonate of soda. .	gr. x.
Water	ʒss.
Oil of peppermint . .	ʒj.
Oil of anise . . .	♏v.
Oil of fennel . . .	♏v.
Oil of cloves . . .	♏ij.
Oil of cinnamon . .	♏j.
Rectified spirit to . .	℥vj.

Dissolve the saccharin and bicarbonate of soda in the water. Mix all the rest of the ingredients with the spirit, dissolve, add the saccharin solution, tint with liq. cocci, and filter.

MOUTH-WASHES

In this section we include all those preparations which are generally used diluted with water as antiseptic or astringent washes for the mouth, especially for removing bad odours or for strengthening spongy gums.

Alkaline Mouth-wash

Sodæ bicarbonatis . .	ʒiss.
Ammoniæ carbonatis .	gr. vj.
Tr. myrrhæ . . .	ʒj.
Aq. coloniensis . .	ʒiij.
Aq. lavandulæ . .	ʒj.
Aq. destillat. ad . .	℥vj.

M. et filtra.

Antiseptic Lotion

Potassii nitrat. . .	ʒij.
Boracis	℥ss.
Potassii chlorat. . .	℥j.
Tr. arnicæ . . .	℥j.
Aq. rosæ ad . . .	℥xxiv.

M.

Both the foregoing are to be used with an equal volume of warm water. The second lotion has a wonderfully beneficial influence upon the gums when tender or swollen.

Astringent Dental Tinctures

I

Tannin	ʒij.
Rose extract . . .	℥ss.
Tincture of orange-peel .	℥ss.
Cochineal colouring .	ʒij.
Camphor-water to . .	℥xx.

Mix, and filter after an hour.

II

Acid. boric. . . .	℥ss.
Tr. krameriæ . . .	℥j.
Aq. coloniensis . .	℥xx.
Tr. myrrhæ . . .	℥xx.

M.

III

Rad. krameriæ	℥j.
Cort. cinchon. rub.	℥j.
Camphoræ	ʒvj.
Tr. myrrhæ	℥ij.
Aq. destillat.	℥ix.
Spt. rectificat.	℥xxvj.

Macerate the powdered solids in the liquids for seven days, then add

Otto rosæ	♏x.
Ol. caryoph.	♏vj.

Filter.

IV

Tr. krameriæ	℥iij.
Tr. myrrhæ	℥iij.
Spt. camphor.	℥iij.
Tr. cinch. rub.	℥iss.
Dentolin. (p. 134) ad	℥xij.

M.

These preparations are all well adapted for putting up as specialities. They are the prescriptions of experienced dentists, and have stood the test of time. Any of the washes may be used frequently when the mouth is very sore, or morning and evening as a preventive of spongy gums. A dessertspoonful in a wineglassful of warm water is the quantity to use.

Astringent Tincture with Red Gum

Gummi rubri	℥j.
Tannin.	ʒx.
Tr. pyrethri	ʒx.
Aq. lavand.	℥j.
Spt. rectificat.	℥x.
Aq. destil. ad	℥xx.

Mix, and after two days filter.

This, in addition to being a powerful astringent, is a safe and effectual toothache cure.

Eucalyptus Mouth-water

Ol. menthæ pip.	ʒss.
Ol. eucalypt. odoros.	ʒj.
Ol. geranii	♏x.
Ol. caryoph.	♏v.
Ol. anisi	♏v.
Acid. benzoic.	ʒj.
Rad. anchusæ	℈iv.
Spt. rectificat.	℥v.

Macerate seven days and filter.

Mentholine Mouth-wash

Menthol.	℈ij.
Ol. caryoph.	ʒiss.
Ol. menthæ pip.	ʒiss.
Acid. boric.	℥j.
Tr. myrrhæ	℥iv.
Tr. persionis	℥ij.
Spt. rectificat. ad	℥xxxvj.

Dissolve the solids in a pint of spirit and add to the rest of the ingredients. Filter.

Iodo-tannin Gum Lotion

Tannin.	ʒj.
Tr. iodi	ʒss.
Tr. myrrhæ	ʒj.
Spt. rectificat.	℥iss.
Aq. rosæ ad	℥v.

Mix and filter.

A teaspoonful in a glass of warm water is most useful in preventing loosening of the teeth.

Saccharin Mouth-washes.—When saccharin was introduced in 1886 there was considerable writing in regard to its power as an antiseptic, especially for dental purposes. A Berlin dental surgeon commended it highly, and the first three formulas are his. He considers that they are particularly well suited for preventing fermentation in the mouth. Saccharin has unquestionably advantages as a dental adjunct, but it has not found complete favour as a specific.

I

Saccharini . . .	gr. xxx.
Ol. menthæ pip. . .	gtt. x.
Spt. tenuior. . . .	℥vj.

M.

II

Saccharini . . .	gr. xv.
Tr. myrrhæ . . .	ʒiss.
Aq. lavandulæ ad . .	℥iij.

M.

III

Saccharini . . .	gr. xv.
Aq. coloniensis . .	℥iss.
Aquæ rosæ . . .	℥iss.

M.

IV

Saccharin. . . .	gr. j.
Ol. caryoph. . . .	♏xv.
Tr. myrrh. . . .	℥ss.
Tr. benzoin. simp. . .	℥ss.
Tr. cinchonæ . . .	℥ss.

M.

V

Acid. salicylic. . .	ʒj.
Saccharin. . . .	gr. xv.
Sodæ bicarb. . . .	gr. xv.
Aq. coloniensis . .	℥vj.

M.

Of either of the foregoing from a half to a whole teaspoonful in a glassful of water is to be used for rinsing the mouth.

Salicylol Mouth-wash.

Ol. menth. pip. . .	ʒj.
Ol. gaultheriæ . .	ʒss.
Acid. salicylic. . .	℥ss.
Aq. rosæ . . .	℥v.
Spt. rectificat. . .	℥xx.

M.

Tint with magenta.

Salol Mouth-wash

Fruct. anisi stellat. . .	ʒv.
Caryophylli . . .	ʒv.
Cort. cinnamomi . .	ʒv.
Cocci cacti . . .	ʒiiss.
Ol. menthæ pip. . .	ʒiij.
Spt. rectificat. . .	Oiij.

Macerate for a week and add

Salol	℥iss.

Filter.

Thirty drops to be used with a wineglassful of warm water.

Smokers' Essence

Ol. menthæ pip. . .	ʒss.
Ol. myristicæ . . .	ʒss.
Ol. origani . . .	ʒss.
Ol. limonis . . .	♏xl.
Ol. melissæ . . .	♏xl.
Ol. rosmarini . . .	ʒiss.
Ess. vanillæ . . .	ʒvj.
Spt. rosæ . . .	℥iss.
Extrait aurantii . .	℥iss.
Tr. benzoin. simp. . .	℥ij.
Spt. rectificat. . .	℥xiiss.

M.

Smokers' Lotion

Aquæ menth. pip. . .	℥vj.
Aq. laurocerasi . .	ʒiv.
Acid. carbol. . . .	♏v.
Sodæ biborat. . . .	ʒj.

M.

To be used several times a day.

The smokers' essence is an excellent preparation for removing the odour of tobacco from the breath. Salol mouth-wash is equally good for this purpose, but the essence has distinctly superior characteristics.

Tincture of Myrrh and Borax.—This is a very old-fashioned but still popular preparation, and the formulas for it are numerous. It is an astringent tincture, except in Scotland, where it is frequently sold without rhatany. The borax exists in the tincture largely as boric acid.

I

Boracis	ʒj.
Glycerini	ʒj.
Aq.	℥v.
Tr. myrrhæ ad	Oij.

M.S.A.

II

Boracis	ʒj.
Glycerini	℥iv.
Aq. coloniensis	℥ss.
Tr. myrrhæ	℥x.

M.S.A.

III

Tr. myrrh.	℥xxxij.
Aq. coloniensis	℥xxxij.
Lig. santal. rub.	℥ss.
Glycerini	℥iv.
Boracis	℥ij.
Aq. rosæ	℥iv.
Mel. depurat.	℥iv.

Macerate one month and filter.

IV

Myrrh. elect. cont.	℥j.
Tr. krameriæ	ʒx.
Sodæ biborat.	ʒiss.
Glycerini	℥ss.
Aq. coloniensis	℥x.

Macerate fourteen days and filter.

V

Boracis	℥ss.
Glycerin.	℥j.
Aq. buliient.	℥iss.
Aq. coloniensis	℥iv.
Tr. myrrh. ad	℥xx.

Rub the borax with the glycerine in a mortar, add the water, and stir until dissolved. When nearly cold add the other ingredients, and shake occasionally during two days, then filter.

VI

Glycerin. boracis	℥j.
Tr. myrrh.	℥xv.
Aq. coloniensis	℥iv.
Tr. krameriæ	℥ss.

M.

VII

Myrrh (in coarse powder)	℥iv.
Orris-root (in coarse powder)	℥iv.
Rectified spirit	℥xlviij.
Eau de Cologne	℥xij.
Borax	℥j.
Boiling water	℥iv.

Macerate the myrrh and orris in the rectified spirit for a week, and strain. Dissolve the borax in the water, add it to the tincture, then the eau de Cologne, and filter.

VIII

Myrrh	℥iij.
Rhatany	ʒvj.
Borax	℥ij.
Honey	℥ij.
Glycerine	℥ij.
Water	℥xvj.
Eau de Cologne	Oiij.

Prepare in a similar way to No. VII.

IX

Myrrhæ	℥ij.
Boracis	℥ij.
Rad. krameriæ	ʒj.
Aq. bullientis	℥vj.
Syrupi	℥ij.
Aq. coloniensis ad	Oij.

Dissolve the borax in the water and add to the rest of the ingredients. Macerate for a week and filter.

X

Boracis	℥ij.
Glycerini	℥iv.
Tr. myrrhæ	℥xxxij.
Spt. rectificat.	Cong. j.
Aq. destillat.	℥xx.
Aq. coloniensis	℥xx.
Syrup.	℥viij.

M.S.A.

It is interesting to note that No. x. is Mr. Joseph Ince's recipe (modified, as the original contains too much water, which deposits a part of the myrrh). The first two formulas are typical of Scotch requirements, but many pharmacists south of the Tweed prefer the non-astringent tincture.

The Bouquet Tincture

Myrrhæ	℥vj.
Ol. neroli	ʒiiss.
Ol. lavand.	ʒiiss.
Ol. limonis	ʒivss.
Ol. bergamot.	ʒivss.
Otto rosæ	♏x.
Spt. rectificat.	Ov.

Macerate seven days, filter, and add

Pulv. boracis	℥iij.
Glycerini	℥ix.

Then add

Syrupi	℥ix.
Pulv. krameriæ	ʒxiv.
Aq. destil.	℥xviij.

Again macerate for a fortnight and filter.

This is a superior tr. myrrhæ et boracis.

Dental Tincture of Myrrh

Macidis contus.	gr. 50
Myrrh. opt. cont.	ʒiv.
Rad. krameriæ cont.	ʒiv.
Glycerini	℥ss.
Spt. rectificat.	℥xij.

Macerate for fourteen days, shaking every day or every second day once during the day, then filter.

Directions.—Half a teaspoonful in a wineglassful of water (tepid in winter) will be found a most effectual astringent wash for the teeth and gums. Should be used every night and in the morning.

Thymol Mouth-wash

Thymol	ʒj.
Peruvian balsam	♏xx.
Oil of peppermint	ʒss.
Oil of cloves	♏ij.
Oil of sage	♏iv.
Rectified spirit to	℥x.

Mix and filter.

DENTAL REQUISITES

It would be beyond the scope of this volume to treat the art of dentistry with completeness. All that is attempted is to give a collection of formulas which we know from experience to be in frequent demand. The latter part of this section is devoted to toothache remedies, which, for convenience, are included here.

Amalgams

Ordinary silver coins filed down and mixed with an equal weight of mercury make a good amalgam for filling teeth.

More commonly precipitated copper (from the sulphate by scraps of iron) is washed, dried, damped with mercurous-nitrate solution, and combined with mercury under hot water.

Arsenical Paste

I

White arsenic, in impalpable powder . .	ʒj.
Cocaine	ʒiv.
Lanoline . . .	ʒv.

Mix.

II

White arsenic, in impalpable powder . .	ʒj.
Antipyrin . . .	ʒij.
Lanoline . . .	ʒiij.

Mix.

III

Acid. arseniosi . .	ʒj.
Morphin. acetatis . .	gr. x.
Ol. caryophylli . .	♏xx.
Creosoti .	q.s. ut fiat pasta

IV

(McIntosh's)

Acid. arseniosi . .	ʒij.
Cocainæ hydrochlor. .	ʒij.
Menthol. . . .	ʒss.
Glycerin. .	q.s. ut fiat pasta

Impression-wax

The best impressions are yielded by pure beeswax freed from grit by melting and straining through flannel. It may be tinted with alkanet. Sometimes a mixture of paraffin and Japan wax (7 : 1) is used. It is softened for use in very hot water.

The following formula yields a product which quickly sets very hard :—

Stearin	℥viij.
Gum dammar . : :	℥xij.
French chalk . . .	℥xxij.
Carmine to colour.	

Melt the stearin and shake into it the gum dammar, previously powdered, then add the chalk tinted with the carmine and ol. geranii ʒss.

Dentists' Plaster

is plaster of Paris of finest quality mixed with water to which a little salt has been added to accelerate setting. The mass—which should be a very thick cream—is made as required.

Dental Cement for Stopping

Zinci oxidi . . .	gr. xcviij.
Magnes. calc. . .	gr. ij.

M.

When required for use the powder is to be made into a stiff paste with acid. phosphoric. syr. q.s.

Zinc-oxychloride Tooth-stopping

Oxide of zinc . . .	℥xxv.
Silica	℥j.
Borax	℥ss.
Glass	ʒv.

All in fine powder, and the zinc oxide freshly calcined. Mix, sift, and keep in a stoppered bottle. When required for use make into a soft paste with a saturated solution of zinc chloride.

Guttapercha Stopping

Dissolve pure guttapercha in five times its weight of chloroform, allow to deposit, pour the clear solution upon zinc oxide (double the quantity of guttapercha taken), make into a paste, and spread into sheets, which cut.

Dental Local Anæsthetics.—The solution of cocaine used in tooth-extraction contains $\frac{3}{4}$ gr. of the hydrochlorate in 8 minims of water. Half of this is injected at the inside of the root of the tooth, and the rest into the outside, care being taken to get the needle of the syringe as near the socket as possible, and to allow the solution time for absorption. This time is at least three minutes. If the patient shows signs of cocaine poisoning, amyl nitrite should be inhaled, and a little brandy swallowed.

Calorific Fluids are for applying to the tooth and surrounding gum a few seconds before extraction. Ethyl chloride is most used, also the following :—

I

Chloroform.	℥j.
Spt. rectificat.	℥ij.
Ol. citronellæ.	♏vj.
Ol. bergamottæ	ʒss.

M.

II

Æther. pur.	℥vj.
Menthol.	℥ss.
Ext. cannab. ind.	℈iv.
Ol. menth. pip.	ʒj.

M.

III

Camphor.	gr. x.
Ol. citronellæ.	♏iv
Æther.	ʒj.
Chloroform. ad	℥j.

Parsons'

Chloroformi	℥iss.
Tr. aconiti	℥iss.
Tr. capsici	℥ss.
Tr. pyrethri	ʒij.
Ol. caryoph.	ʒij.
Camphor.	ʒij.

M.S.A.

The tinctures for Parsons' fluid are made with S.V.R.

TOOTHACHE REMEDIES

Ninety per cent. of the cases of toothache can be divided into two groups, primary and secondary. Primary toothache is congestion of the tooth pulp; the unyielding walls of the pulp cavity permitting no expansion, there is intense pressure on the nerve tissue, and consequent pain, which finally terminates by strangulation of the pulp. This is true toothache, arising in the tooth, but it may be felt in the terminals of any of the branches of the fifth nerve on the corresponding side of the face, and is rarely felt in the tooth where it originates, unless there is suppuration in the pulp, in which case the peridental membrane will be affected. It is obvious, therefore, that many cases of so-called neuralgia in the face are simply toothache. Careful excavation, sufficient to allow an escape of blood from the pulp, at once relieves the pain, but generally in such cases toothache tinctures, &c., are applied. The surgical treatment consists of the use of an arsenical dressing to devitalise the pulp, removal of the latter from the root canals, and filling to the apex.

The secondary form of toothache is usually admitted by the sufferer to be toothache, because the pain appears to be intensified by occlusion with an opposite tooth and by pressure of any kind. In reality the pain is caused by gangrene of the pulp, and most dentists order immediate extraction. So far as the public are concerned there is little distinction between the kinds of toothache—everybody accepts Burns's definition of it, and asks a remedy or palliative, of which we subjoin numerous examples.

I

Eucalyptus oil . .	ʒj.
Mastic	ʒij.
Camphor . . .	℥ss.
Morphine (alkaloid). .	ʒss.
Chloroform . . .	℥ij.
Absolute alcohol to . .	℥v.

Macerate, and when dissolved strain. If required coloured add a little tr. benzoin. co.

II

Camphor. . . .	ʒij.
Mastic.	℥j.
Bals. peruvian. . .	ʒj.
Chloroformi . . .	ʒxiv.

Dissolve and filter.

Without the camphor this is *Sedative Dental Mastic.*

III

Tannin.	℥iv.
Camphor. . . .	℥viij.
Collodii	Oij.
Acid. carbolic. cryst. .	ʒj.
Æther. sulph. . . .	℥iij.

M.S.A.

This is best made by leaving the pyroxylin of the collodion to the last, dissolving the tannin, camphor, and phenol in the ether and spirit, straining, then adding the pyroxylin.

IV

Acid. carbol. (1 in 20 aqua)	℥j.
Chloral. hydratis . .	℥j.
Tr. aconiti . . .	℥j.
Camphor. . . .	℥j.
Menthol. . . .	ʒij.
Alcohol. absolut. . .	℥j.

M.

The first three form temporary stoppings, and are to be applied on cotton-wool, the hollow of the tooth being previously dried by packing with absorbent cotton.

V

Mastic	ʒiv.
Tannin	ʒij.
Camphor	ʒiv.
Tincture of myrrh	ʒiv.
Chloroform	ʒiv.
Tincture of opium	ʒiv.
Rectified spirit	℥iij.

Macerate for a week and filter.

This makes a very good toothache anodyne, as well as a temporary stopping, and it has the advantage of being comparatively innocuous. Send it out in ʒij. bottles, with some absorbent cotton, to retail at 6*d.*

Directions.—Dry the hollow tooth by stuffing the hole with the cotton-wool. Remove the cotton, and immediately place in the hole a fresh piece of the cotton-wool saturated with the tincture.

VI

Finest mastic	ʒvj.
Extract of Indian hemp	ʒj.
Chloroform	℥ij.

Mix, and shake occasionally until dissolved; then add

Morphia	℈j.
Menthol	ʒj.
Chloral hydrate	ʒij.
Camphor	ʒiv.
Oil of cajuput	ʒij.
Tincture of pellitory to	℥iv.

Mix, and shake occasionally until dissolved; then add the mastic solution and filter.

This is both an anodyne and a protective. It is very efficient, and becomes popular. It is to be put up in ʒij. phials, cased, and to retail at 1*s.* If labelled as follows a stamp will be required:—

INSTANTANEOUS
TOOTHACHE-CURE

A few drops to be applied on cotton-wool.

VII

Acid. carbol.	gr. x.
Glycerini	ʒj.

Dissolve and add

Ess. caryoph.	ʒi.
Tr. aconiti	ʒss.
Tr. opii	ʒss.

M.

VIII

Camphor.	ʒj.
Chloroform.	ʒss.
Ol. caryoph.	♏xv.
Ol. cajuput.	♏xv.
Spt. rectificat.	ʒj.

M.

IX

Menthol.	ʒj.
Spt. rectificat. ad	℥j.

S.

This is particularly useful for sensitive dentine. Also applied with a brush from the temple down the cheek to the spot where the affected tooth is, the pain is relieved in a few minutes.

X

Tannin.	℈ij.
Creosoti	gtt. xv.
Æther. ad	℥j.

S.

XI

Creosoti	℥j.
Ol. caryoph.	℥j.
Ol. menth. pip.	℥ss.
Chloroformi ad	℥iv.

M.

XII

Gallæ	℥iv.
Rad. pyrethri	℥iij.
Opii	℥ss.
Ol. caryoph.	ʒij.
Ol. cajuput.	ʒij.
Glycerini	℥ij.
Aquæ	℥iij.
Spt. rectificat.	℥xv.

Macerate the powdered solids in

the glycerine, water, and 5 oz. of spirit for three days, then add the rest of the spirit and oils, and after a week filter.

XIII

Ol. caryoph. . . .	℥ss.
Acid. carbolic. liq. . .	℥iij.
Liq. cocci . . .	ʒss.
Glycerini ad . . .	℥vj.

M.

XIV

Ac. carbol. . . .	ʒij.
Camphoræ . . .	ʒiij.
Menthol. . . .	ʒss.
Chloroformi ad . .	℥j.

S.

XV

Thymol. . . .	gr. xv.
Menthol. . . .	gr. xv.
Cocainæ . . .	gr. j.
Chloroform. ad . .	℥j.

M.

XVI

Camphor. . . .	ʒj.
Ac. tannic. . . .	ʒj.
Sang. draconis . .	ʒj.
Mastic.	ʒiss.
Ol. caryophyll. . .	ʒj.
Chloroformi . . .	℥ij.
Spt. rectificat. . .	℥ij.

Macerate several days and filter.

These formulas afford sufficient variety to choose from. The general directions are to apply a few drops on cotton-wool to the hollow of the tooth.

Dental Colloids

Crystallised carbolic acid should be used for these. Melt it on a water-bath and add to the other ingredients of the preparations while in a liquid state.

I

Acid. carbol. . . .	ʒj.
Collodii	ʒj.

Half fill a ʒij. phial with the collodion, then pour in the acid and shake.

II

Morph. acet. . . .	gr. j.
Ol. menth. pip. . .	♏iv.
Acid. carbol. . . .	♏xx.

Mix and add

Collodii ad . . .	ʒj.

This is called *Neuro-dental Colloid*, a name which may also be applied to any in this class.

III

Ac. carbol. . .	gr. xv.
Menthol. . . .	gr. x.
Collodii ad . . .	ʒj.

M.

'Take a little on a match stalk, and apply to the cavity dried out with cotton-wool, placing a plug of wool on top.'

Camphor-chloral

Camphor.	
Chloral hydrat. .	āā pt. æq.

Rub together to form a solution.

Camphor-phenol

Acid. carbol.	
Camphor. . .	āā pt. æq.

Rub together.

Mentholated Camphor-chloral

Camphor.	
Chloral. hydrat.	
Menthol. . .	āā pt. æq.

Rub together.

Coniine Toothache-drops

Coniine (pure) . .	gtt. j.
Oil of cloves . . .	gtt. iv.
Oil of cinnamon . .	gtt. iv.
S.V.R.	ʒij.

Directions.—Put one drop on a pledget of absorbent cotton, and apply to the hollow tooth.

This acts like a charm in some instances.

Cocaine Drops

Cocain. hydrochlor.	gr. v.
Aq. chloroformi	ʒj.

S.

To be applied to the cavity with a camel-hair pencil.

Toothache Ball and Stopping

Resin. flav.	℥j. ʒvj.
Gum. juniper.	℥j. ʒvj.
Spt. rectificat.	℥j.
Spt. ætheris	ʒvj.
Acid. carbol.	℥j.

Mix and dissolve.

Toothache-pills

I

Cocainæ hydrochlor.	gr. xvj.
Pulv. opii	gr. lxiv.
Menthol.	gr. xvj.
Pulv. althææ	gr. xlviij.
Muc. acaciæ	♏viij.

Ft. massa. Divide into ½-gr. pills, one of which is to be put into the hollow of the tooth and covered with cotton-wool.

II

Pulv. opii	℈iv.
Pulv. rad. belladon.	℈iv.
Pulv. pyrethri	℈iv.
Ol. caryophyll.	gtt. xv.
Ol. cajuput.	gtt. xv.
Ol. amygdal.	ʒss.
Ceræ flav.	ʒij.

With the wax melted in the almond oil by heat incorporate the other ingredients, and divide into 500 pills.

Toothache-sticks

Ceræ flav.	℥ss.
Acid. carbol.	ʒiij.
Ol. caryoph.	ʒss.

Melt the wax and add to it the acid and oil. While still liquid immerse thin layers of absorbent cotton in the fluid, and when sufficiently cool roll them into the shape of rods. For use snip off a little piece, warm it gently, and introduce into the hollow tooth.

Toothache-snuff

Sodæ bicarb.	℥ij.
Pulv. amyli	℥j.
Pulv. verat. alb.	ʒj.
Cocain. hydroch.	gr. x.

M.

Two-drachm boxes of this are sold for a penny.

Toothache-wax

Powdered chloral hydrate	℈iv.
Powdered opium	ʒiss.
Powdered mastic	ʒiiss.
Venice turpentine	ʒvj.
Beeswax	℥ij.

The last three substances are melted together, then the chloral and opium are introduced, and the mixture stirred until it becomes plastic. It is then rolled out into rods or formed into pellets.

Toothache-powders

The following recipes are typical of many articles now sold for relieving toothache:—

I

Acetanilidi	gr. v.
Caffeinæ	gr. j.
Pulv. sacch. alb.	gr. ij.
Carmini	q.s.

Just enough carmine is to be added to give a faint pink colour.

A powder may be taken every four hours.

II

Quininæ sulph.	gr. ij.
Ammonii chlorid.	gr. x.

M.

Every four hours.

Old-fashioned, but good.

The majority of neuralgic and headache powders which we have examined consist solely of acetanilide, 5 to 8 gr.

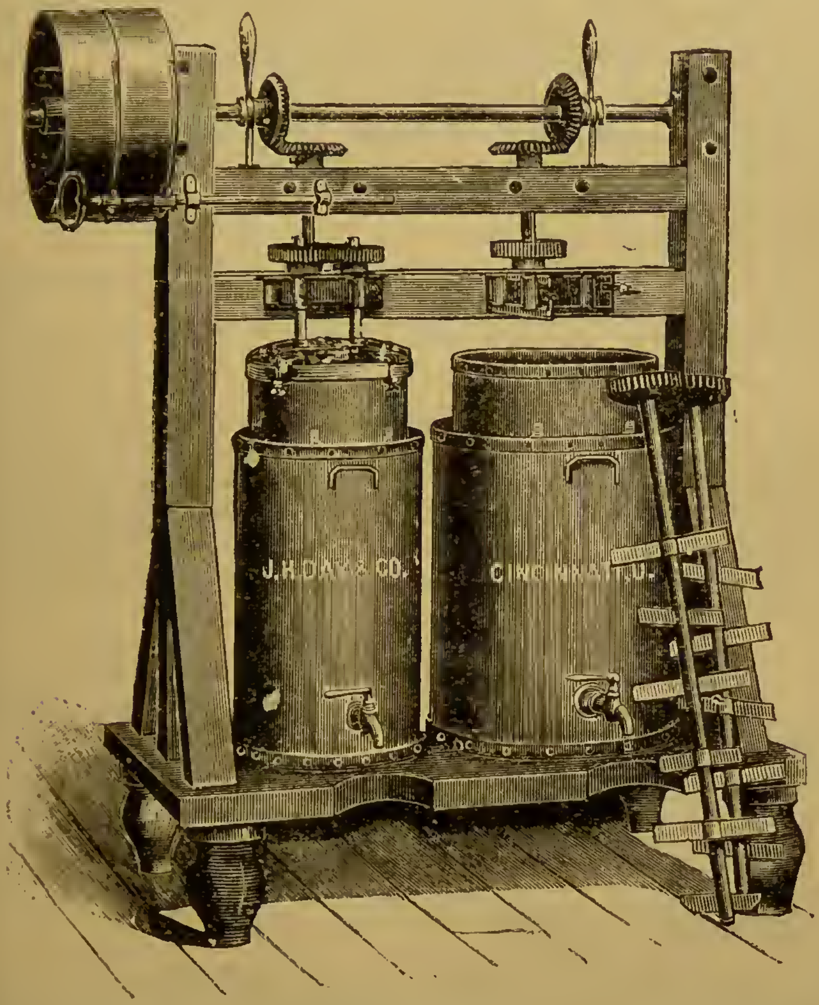
PERFUMES

THE manufacture of perfumes is one of the oldest arts known to mankind, and one which retains all its ancient mystery. Science has not simplified perfumery much, nor Chemistry relieved it of empiricism, although synthetic perfumes promise to have some influence in this direction. We know by tradition and by practice how to soften and enrich distinctive odours, but whether the results are due to mere neutralisation of one odour, or a part of it, by a different one, or to the formation of new molecular compounds, is beyond our ken.

One fact stands out prominently. The finest perfumes are those which are prepared direct from the fresh flowers by simple absorption in a fatty medium. These are represented in the floral pomades which constitute the backbone of the perfumer's art. Simple solutions of essential oils do not possess the same fragrance. This we appreciate when we compare an essence of rose made from rose pomade with one made by dissolving otto of rose in spirit. The former has a delicacy which the latter never attains by age or dilution. Whether in the process of distillation some principle of the rose is lost or destroyed we need not inquire. The fact remains that fats and fixed oils extract more delicate perfumes from flowers than we can get by water-distillation, and upon this is based an important branch of the perfume industry.

Mr. F. W. Warrick states that in the manufacture of floral pomades as pursued in the South of France, the fat employed is a mixture of lard and suet, both of which are refined and purified during the winter months, and kept stored away in well-closed tins until required for use the summer following. When the flower-harvest comes round 1 cwt. of the fat is melted in a steam-jacketed pan, and poured into a tinned-copper vat, capable of holding from 5 to 6 cwt.; about 1 cwt. of flowers being added, these are well stirred in with a wooden spatula. After standing for a few hours the contents are poured into shallow pans, heated to 60° C., and then strained through a tin sieve. Fat retained by the flowers is squeezed out by hydraulic pressure, freed from water by subsidence, and the whole of the fat again receives a second or third complement of flowers, being treated as before. This is the process of maceration. In some cases it is supplemented by the process of *enfleurage*, or cold extraction. The apparatus used in this process consists of frames the bottoms of which are sheet glass. A number of these frames, all of the same size, when placed one on the top of the other form a tolerably tight box. To make the pomade the fat mixture is spread on each side of the glass, and the blossoms are lightly strewn upon the upper surface. Then the frames are fitted together one on the top of the other. They are set aside, and next day the flowers are removed, and fresh blossoms put in their place, this being repeated until the fat is sufficiently impregnated. From time to time the surface of the absorbent is scratched with a comb-like instrument, so that the lower portions of fat may receive some of the perfume. The pomades are used for making essences which in this treatise are designated 'Extraits.' Concrete perfumes are also made from them (see page 152). The most convenient strength for extraits is 16 oz. of the pomade to 16 fl. oz. of spirit—*i.e.* a mixture of 9 fluid parts of 60 over-proof rectified spirit (triple distilled) with 1 fluid part of distilled water. On the large scale extraits are made without heat in such an apparatus as is shown here. The fat and spirit are placed in the tank within which two churning-rods (shown leaning against the side) are placed, which by the action applied by hand or power thoroughly mix the pomade with the spirit. On the small scale it is customary to melt the pomade by a gentle heat and pour it little by little into the spirit, shaking vigorously so as to have it thoroughly divided. Shake several times daily for a week.

Amongst extraits which are thus made are cassie, orange, reseda (mignonette), rose, tuberose, violet, jasmine, and jonquil. Working as a retail chemist would do, the following is the process which gives the best results. Cassie Extrait we take as an example, but other extraits are made in the same way: –



Floral-pomade Washer, manufactured by Messrs. J. H. Day & Co., Cincinnati, Ohio, U.S.A.

Cassie pomade	1 lb.
Spirit	16 oz.

Place the pomade in a wide-mouthed stoppered bottle of about 50 oz. capacity; close the bottle and occasionally put it into hot water until the pomade melts; then add the spirit a few ounces at a time, shaking well until the whole has been added. Set aside for a month, shaking daily; then filter the extrait, and should it not come up to 16 fl. oz., take as much spirit as will make up that bulk, mix with the pomade, and in a day or two filter, and add to the first.

It is customary to give three washings; the liquid from the second washing being used for cheap perfumes and for diluting, while the liquid from the third is also used to make the first washing of the next batch. The fat must be separated as far as possible from the first and second washings by chilling with ice and filtering.

Concrete Perfumes are commercial products consisting of the perfume of floral pomades minus the fat. To make extraits from them, proceed as follows:—

Rub 1 dr. of concrete perfume with 10 to 15 minims of rectified spirit in a mortar until quite smooth; slowly add more spirit, and transfer the solution to a 24-oz. bottle; wash out the mortar with spirit until 20 oz. has been used. Shake occasionally for a day, and filter. Preserve the filter-paper and shake it with 20 oz. of spirit to make a second washing, and repeat this if necessary, or use the paper in making sachet-powder.

ESSENCES, SPIRITS, AND TINCTURES

The following are formulas for essences and tinctures which are frequently required in compounding perfumes:—

Essence of Ambergris

Ambergris . . .	gr. lxxx.
Powdered orris . .	ʒij.
Spirit	Oj.

Macerate for at least fourteen days and filter.

Compound Tincture of Ambergris

Ambergris . . .	ʒj.
Musk	ʒss.
Oil of cinnamon . .	♏xviij.
Oil of rhodium . .	♏xij.
Carbonate of potash .	ʒiss.
Spirit	℥viij.
Spirit of rose . . .	℥iv.

Macerate for fourteen days in a moderately warm place and filter.

Spirit of Almonds

Essential oil of almonds .	♏lxxx.
Spirit	Oj.

Dissolve.

Tincture of Benzoin

Siam benzoin . . .	℥ij.
Spirit to	Oj.

Macerate for at least fourteen days and filter.

Essence of Civet

Civet	ʒj.
Powdered orris . .	℥ss.
Carbonate of ammonia .	gr. x.
Spirit	℥xv.
Water	℥j.

Rub up the civet in a mortar with the orris. Dissolve the carbonate in the water, add to the spirit, and mix with the mortar contents. Bottle, set aside for a month, and filter.

Spirit of Cloves

Oil of cloves . . .	ʒij.
Spirit to . . .	Oj.

Dissolve.

Spirit of Geranium

Oil of rose-geranium .	℥j.
Spirit to	Oj.

Dissolve.

Essence of Musk

I

Grain musk . . .	ʒij.
Hot water . . .	℥j.
Spirit	℥xv.

Rub the musk to a paste with the water; cover, and when cold add the spirit. Macerate for a fortnight and filter, washing the marc with an ounce of spirit.

II

Finest grain musk . .	gr. xl.
Carbonate of potash .	gr. v.
Boiling water . .	℥j.
Rectified spirit . .	℥ix.

Mix the first three in a mortar, stir occasionally until cold, pour into a bottle, and add the spirit. Macerate ten days, or until required, and filter.

III

Grain musk . . .	ʒj.
Solution of ammonia .	♏x.
Water	℥j.
Spirit to . . .	Oj.

Macerate for a fortnight, and filter.

Ammonia has a wonderful influence in developing the odour of musk, and restores it when lost.

Spirit of Neroli

Oil of neroli . . .	℥ss.
Spirit to . . .	Oj.

Dissolve.

Tincture of Orris

Orris-root in No. 40 powder . . .	℥v.
Spirit . . .	a sufficiency

Macerate the orris in 10 oz. of spirit for two days, then pack in a percolator, and allow all the liquid to percolate through, adding more spirit until 20 oz. has been used. Finally, displace as much as possible of the spirituous tincture with water.

Spirit of Rose

Otto of rose . . .	ʒij.
Oil of rose-geranium .	ʒj.
Spirit to . . .	Oj.

Mix and shake, set aside for a few days, and filter.

Spirit of Santal

Same strength as spirit of cloves.

Tincture of Storax

Liquid storax . . .	℥j.
Spirit to . . .	Oj.

Mix well, set aside for a week, and filter.

Tincture of Tonka Bean

Made from Tonka beans in the same manner and of the same strength as tincture of orris.

Essence of Vanilla

I

Fine vanilla (cut small) .	℥j.
Spirit	℥xvj.

Macerate for a month and filter.

This is best for perfumes if kept long enough.

II

Fine vanilla (cut small) .	℥j.
Grain musk . . .	gr. j.
Carbonate of potash .	gr. x.
Boiling water . .	℥iv.

Put the solids in a flask and pour the boiling water in. Cork and agitate slightly. Set aside until cool and add

Spirit	℥xij.

Macerate two weeks and filter.

Some essence of vanilla formulas prescribe sugar: this is a mistake, because the essence so made becomes thick.

Spirit of Vetivert

Same strength as spirit of cloves.

Spirit of Ylang-ylang

Same strength as spirit of cloves.

Essence of Mirbane

Oil of mirbane	℥j.
Spirit	℥ix.

Mix.

Compound Essence of Tonka Bean

Bruised orris-root	℥ij.
Tonka bean (cut small)	ʒvj.
Essence of ambergris	♏xxx.
Oil of ylang-ylang	♏xxx.
Compound essence of orris	℥iv.
Oil of lemon	ʒss.
Otto of rose	ʒss.
Oil of bergamot	♏lxxx.
Spirit	℥xvj.

Macerate fourteen days and filter.

Compound Essence of Orris

Vanilla (cut very small)	ʒij.
Orris-root, bruised	ʒvj.
Essence of Peru balsam	℥j.
Spirit	℥xv.

Macerate fourteen days and filter.

Essence of Peach-blossom

Orange-flower extrait	℥v.
Jasmine-flower extrait	ʒx.
Spirit of almonds	℥iiiss.
Essence of Peru balsam	ʒij.
Oil of lemon	ʒij.
Spirit	℥iiss.

Mix.

Essence of Peru Balsam

Peruvian balsam	℥j.
Spirit	℥ix.

Shake well occasionally for a day, allow to settle, and filter.

Essence of Verbena

Oil of lemongrass	ʒiij.
Oil of lemon	℥ss.
Spirit to	Oj.

Mix, add 2 dr. of French chalk, and filter.

HANDKERCHIEF BOUQUETS AND ESSENCES

It is with considerable hesitancy that we include in the volume such a number of formulas for perfumes as those subjoined, although they only represent about a third of those available. The hesitancy is due to the prevailing fashion at the time of writing for the so-called individual odours, the violets of all kinds predominating. There are periods in perfumery. We have had a cherry-blossom one; the year 1896 ushered in the period of violets. These are mere fashions, if not fads, and we cannot believe that the perfumes which delighted our grandmothers will be utterly forgotten. A time may come round when any one of the perfumes for which formulas are here printed may become quite popular.

Alexandra Bouquet

Oil of bergamot	ʒiiss.
Oil of rose-geranium	ʒss.
Otto of rose	ʒss.
Oil of cassia	♏xv.
Spirit	Oj.

Mix.

Bouquet d'Amour

Oil of lavender	ʒij.
Oil of cloves	ʒj.
Oil of bergamot	ʒj.
Otto of rose	♏ij.
Essence of ambergris	ʒv.
Essence of vanilla	ʒv.
Spirit to	Oj.

Mix, and after standing a month filter.

Apple-Bloom Bouquet

Oil of ylang-ylang	℥j.
Oil of lignaloe	℥viij.

Mix, and label 'Oil of apple-bloom.'

To make the bouquet take

Concrete violet, washing No. 3	℥lxxx.
Oil of apple-bloom	℥ij.
Spirit of cloves	℥ij.
Essence of artificial musk (1 per cent.)	℥iv.
Water	℥xl.

Extrait d'Ambre

Rose extrait	℥x.
Essence of ambergris	Oj.
Essence of musk	℥v.
Essence of vanilla	℥ij.
Rose-water	℥vij.

Mix.

Bridal Bouquet

Oil of sandalwood	ʒss.
Rose extrait	℥iv.
Jasmine extrait	℥iv.
Orange-flower extrait	℥xvj.
Essence of vanilla	℥j.
Essence of musk	℥ij.
Tincture of storax	℥ij.

Mix.

Princess Beatrice Bouquet

Spirit of rose	Oj.
Violet extrait	℥xxx.
Jasmine extrait	℥xxv.
Tuberose extrait	℥xvj.
Tincture of orris	℥v.
Essence of vanilla	℥iij.
Cassie extrait	Oj.
Rose extrait	Oij.
Orange extrait	℥vj.
Essence of musk	℥iv.
Essence of ambergris	℥ij.
Oil of French geranium	♏ 50
Oil of patchouli	♏x.

Mix.

Ess. Bouquet

For a note on the origin of this perfume *see* 'Perfumed Waters.'

I

Otto of rose	♏iv.
Oil of neroli	♏ij.
Essence of musk	♏xl.
Jasmine extrait	℥vss.
Tincture of orris	℥viij.
Spirit to	Oiv.

Mix.

II

Oil of neroli (pétale)	♏xv.
Oil of lemon	ʒj.
Oil of bergamot	ʒss.
Cassie extrait	℥j.
Essence of ambergris	℥j.
Tincture of orris	℥j.
Spirit of rose	℥viij.
Spirit	℥v.

Mix.

III

Oil of bergamot	ʒij.
Oil of lemon	ʒj.
Tincture of ambergris	℥j.
Tincture of orris	℥ij.
Spirit of rose	℥iv.

Mix and filter with French chalk.

IV

Ol. lavand. ang.	ʒss.
Ol. neroli super.	♏v.
Ol. rosæ virgin.	ʒss.
Ol. bergamot.	♏xxiv.
Ess. moschi	ʒiiss.
Ess. ambergris	ʒv.
Spt. rectificati	℥viij.

M.

Sweet Briar

Oil of neroli	ʒj.
Oil of lemongrass	ʒss.
Oil of lemon	ʒj.
Oil of bergamot	ʒij.
Essence of musk	℥ss.
Cassie extrait	℥ij.
Orange extrait	℥iv.
Spirit of rose to	Oj.

Mix.

Brighton Nosegay

A refreshing perfume for the handkerchief, resembling, but excelling, Mona Bouquet.

Ess. moschi	℥iv.
Ol. bergamot.	ʒiss.
Extrait jasmin.	℥ij.
Ol. lavand. ang.	ʒss.
Ol. neroli	ʒss.
Ol. patchouli	♏v.
Ol. pimentæ	♏v.
Ol. rosæ	ʒiss.
Ol. verbenæ	♏viij.
Ol. cassiæ	♏v.
Spt. rect. ad	Oij.

Macerate one month, then filter three times.

Chypre

Oil of rosemary	♏c.
Oil of bitter orange	℥ss.
Oil of petitgrain	ʒij.
Oil of bergamot	ʒiiss.
Oil of limetta	℥ss.
Oil of neroli	♏xlv.
Spirit	Oiv.

Mix, and after four days add 10 oz. of distilled water. Allow to remain at rest for a fortnight and filter.

Buckingham Bouquet

Oil of lavender	♏x.
Oil of neroli	♏x.
Otto of rose	♏xx.
Cassie extrait	℥viij.
Jasmine extrait	℥viij.
Orange-flower extrait	℥viij.
Rose extrait	℥viij.
Essence of ambergris	℥iv.
Tincture of orris	℥iv.

Mix.

Carnation Pink

Oil of cloves	♏v.
Cassie extrait	℥iv.
Jasmine extrait	℥ij.
Orange-flower extrait	℥iv.
Rose extrait	℥viij.
Essence of civet	℥ij.
Essence of vanilla	℥ij.
Tincture of storax	℥j.
Spirit of ylang-ylang	℥iv.

Mix.

Caroline Bouquet

Oil of lemon	♏xv.
Oil of bergamot	ʒj.
Rose extrait	℥iv.
Tuberose extrait	℥iv.
Violet extrait	℥iv.
Tincture of orris	℥ij.
Essence of ambergris	℥j.

Mix, and filter after ten days.

Cedar of Lebanon Bouquet

Oil of cedar-wood	℥j.
Spirit of rose	℥vj.
Spirit	℥xxv.

Mix.

Cherry Blossom

I

Essence of white heliotrope	℥vj.
Essence of vanilla	ʒj.

Mix.

II

Essence of peach-blossom	℥xij.
Violet extrait	℥ij.
Essence of mirbane	℥ij.

Mix.

Essence of Clove Pink

I

Rose extrait	℥xiv.
Orange-flower extrait	℥vij.
Essence of vanillin	℥iiiss.
Oil of cloves	♏xx.

Mix, and after standing for several days filter.

II

Oil of cloves	♏xiij.
Cassie extrait	℥v.
Orange extrait	℥v.
Rose extrait	℥x.
Spirit of rose	℥vij.
Essence of vanillin	℥iij.
Essence of musk	℥ss.

Mix.

May be tinted pink with a drop or two of eosin solution.

Court Nosegay

Rose extrait	Oj.
Violet extrait	Oj.
Jasmine extrait	Oj.
Spirit of rose	Oj.
Essence of musk	℥j.
Essence of ambergris	℥j.
Oil of lemon	℥ss.
Oil of bergamot	℥ss.
Oil of neroli	ʒj.

Mix.

Night-blooming Cereus

(*Cereus nycticallus*, N.O. Cactaceæ)

Essence of civet	℥ij.
Tincture of Tonka bean	℥ij.
Tincture of benzoin	℥iv.
Spirit of rose	℥iv.
Jasmine extrait	℥iv.

Mix.

Eugenia Bouquet

Tuberose extrait	℥viij.
Essence of civet	℥ss.
Essence of musk	℥j.
Essence of vanilla	℥j.
Tincture of benzoin	℥ss.

Mix.

Essence of Eglantine

The original recipe of the late Mr. White, Cornhill, London, for a perfume which was formerly highly esteemed in the City.

Oil of lemon	℥iss.
Oil of lavender	ʒvij.
Oil of bergamot	ʒx.
Oil of neroli	ʒiij.
Oil of cedrat	ʒiv.
Oil of cloves	ʒiv.
Oil of sandalwood	ʒj.
Oil of cinnamon	ʒss.
Oil of caraway	ʒss.
Oil of nutmeg	ʒss.
Essential oil of almonds	♏xvj.
Millefleurs	℥xiij.
Jasmine extrait	℥xiij.
Essence of ambergris	℥ij.
Essence of musk	℥ij.
Spirit	Cong. j.

Mix, allow to stand for a month, and filter.

Empress of India Bouquet

Grain musk	ʒss.
Ambergris	ʒss.
Civet	gr. xv.
Otto of rose	♏xlv.
Oil of rhodium	♏xv.
Oil of bergamot	ʒivss.
Oil of lavender	ʒvj.
Essence of Tonka bean	℥iij.
Essence of patchouli	℥iij.
Jasmine extrait	℥vj.
Triple rose-water	℥iij.
Spirit	℥xlviij.

Macerate a month and filter.

Excelsior Bouquet

Extrait violette de Parme	℥iv.
Ol. bergamot.	ʒij.
Moschi	gr. xx.
Ol. santal. flav.	♏ 50
Ol. lavand. ang.	ʒij.
Ol. rosæ virgin.	♏lxxx.
Aquæ flor. aurant.	℥iij.
Spt. rectificat. ad	℥xxx.

Mix, and macerate one month, then filter.

Esterhazy Bouquet

This favourite Hungarian bouquet has as great a reputation in Austria as Eau de Cologne has in Germany or England.

Oil of cloves . . .	♏xv.
Oil of sandalwood . .	♏xv.
Essence of ambergris .	℥iss.
Tincture of orris . .	℥vj.
Essence of vanilla . .	℥vj.
Tincture of Tonka . .	℥vj.
Spirit of vetivert . .	℥vj.
Spirit of neroli . .	℥vj.
Orange extrait . .	℥vj.
Spirit of rose . . .	℥vj.

Mix.

Extrait de Caprice de Valerie

Italian verbena oil . .	♏x.
Oil of rose-geranium .	♏x.
Oil of bergamot . .	ʒss.
Essence of musk . .	ʒss.
Tincture of civet . .	ʒss.
Tincture of storax . .	℥ss.
Essence of vanilla . .	℥ss.
Extrait jasmine . .	℥x.
Extrait tuberose . .	℥viiss.
Extrait rose . . .	℥iiss.
Tincture of orris-root .	℥iiss.
Rectified spirit . .	℥ij.
Rose-water . . .	℥j.

Mix.

Floral Bouquet

Jasmine extrait . .	℥iij.
Millefleurs . . .	℥vj.
Spirit	℥vj.

Mix.

Floral Extract

Grain musk . . .	gr. xij.
Oil of bergamot . .	℥ss.
Otto of rose . . .	℥ss.
Oil of cassia . . .	ʒss.
Oil of cinnamon . .	ʒj.
Oil of neroli . . .	♏xx.
Jasmine extrait . .	℥iv.
Spirit	Oivss.

Mix, and after a month filter.

Folkestone Bouquet

Musk	ʒss.
Oil of neroli . . .	ʒss.
Oil of lavender . .	ʒss.
Oil of cloves . . :	ʒss.
Oil of sandalwood . .	ʒss.
Otto of rose . . .	ʒj.
Oil of bergamot . .	℥ss.
Millefleurs . . .	℥iv.
Jasmine extrait . .	℥iv.
Tincture of Tonka bean .	℥iv.
Tincture of orris . .	℥iv.
Triple rose-water . .	℥x.
Triple orange-flower water	℥x.
Spirit	Oiv.

Macerate a month and filter.

Frangipanni

I

Oil of bergamot . .	ʒiiss.
Essence of vanilla . .	ʒiiss.
Tincture of tolu . .	ʒij.
Essence of musk . .	ʒiss.
Rose extrait . . .	℥j.
Cassie extrait . . .	℥j.
Jasmine extrait . .	℥viij.
Spirit	Oj.

Mix.

II

Oil of neroli . . .	♏xv.
Oil of sandalwood . .	♏xxx.
Otto of rose . . .	♏x.
Essence of musk . .	ʒiij.
Essence of ambergris .	ʒvj.
Spirit of vetivert . .	℥iij.
Violet extrait . . .	℥ij.
Spirit	Oj.

Mix.

III

(A Superior Bouquet)

Oil of sandalwood . .	ʒj.
Oil of neroli . . .	ʒj.
Oil of rose-geranium .	ʒj.
Otto of rose . . .	ʒij.
Essence of civet . .	℥ss.
Spirit of vetivert . .	℥j.
Tincture of orris . .	℥iij.
Orange-flower extrait .	℥iij.
Tuberose extrait . .	℥iij.
Essence of musk . .	℥v.

Mix.

Germania

Grain musk	gr. iij.
Coumarin	gr. vj.
Vanillin	gr. xv.
Storax	ʒx.
Essential oil of almonds	♏viij.
Oil of orris-root	♏xv.
Otto of rose	ʒss.
Oil of neroli	ʒss.
Oil of rose-geranium	ʒiss.
Tuberose extrait	℥xv.
Jasmine extrait	℥xv.
Spirit	Ovj.

Macerate for a month and filter.

Heather Bloom

Ess. bouquet	℥x.
Wood violet	℥x.
Jasmine extrait	℥v.

Mix.

Heliotrope

I

Essential oil of almonds	♏x.
Essence of civet	℥ss.
Spirit	℥ij.
Essence of ambergris	℥ij.
Orange-flower extrait	℥ij.
Rose extrait	℥iv.
Essence of vanilla	℥viij.

II

Heliotropin	gr. xv.
Otto of rose	♏iv.
Oil of bitter almonds	♏ij.
Essence of musk	ʒij.
Ess. bouquet	℥iij.
Jasmine extrait	℥viss.

III

Heliotropin	ʒiv.
Compound essence of orris	Oiss.
Rose extrait	℥viij.
Jasmine extrait	℥viij.
Oil of neroli (pétale)	♏ 50
Oil of bergamot	ʒij.
Essence of musk	℥iv.
Otto of rose	ʒij.
Compound essence of Tonka bean	℥viij.
Spirit	Oiv.

Allow to stand for fourteen days, then filter three times through English grey filtering-paper.

IV

Grain musk	gr. x.
Vanilla	℥viij.
Orris-root	℥viij.
Spirit	Ovij. ℥v.

Percolate with the spirit, and in the percolated tincture dissolve the following:—

Benzoic acid	ʒiss.
Peruvian balsam	ʒiss.
Oil of neroli	ʒiss.
Otto of rose	ʒiss.
Essential oil of almonds	ʒiss.
Oil of ylang-ylang	♏x.
Conc. orange-flower water	℥xv.

Mix well and set aside for a month, then filter.

V

Concrete orange, washing No. 3	℥xxv.
Heliotropol	℥j.
Oil of ylang-ylang	℈j.
Oil of neroli	gr. vj.
Essence of rose	ʒj.
Ionone (10 per cent. sol.)	♏xij.

Mix, and label 'Oil of heliotrope.'

To make inexpensive heliotrope bouquet, mix

Oil of heliotrope	℥xij.
Concrete rose, washing No. 3	℥x.
Rose-water	℥xv.

After twenty-four hours filter through fullers' earth.

White Heliotrope

A

Heliotropin	ʒij.
White-rose extrait	℥j.
Jasmine extrait	℥j.
Essence of musk	℥ss.
Rectified spirit to	Oiv.

Mix.

B

Spirit of neroli	℥iv.
Oil of bergamot	ʒj.
Essential oil of almonds	♏iv.

Mix.

Allow A and B to stand separately

for a week, then mix them and filter.

Hilly Fields Bouquet

This is a rather pronounced perfume, but it should take well with people who want 'something strong.' Any other name can be given to it.

Tonka beans	℥j.
Vanilla	ʒiv.
Orris-root	℥iij.
Grain musk	gr. iv.
Oil of bergamot	ʒij.
Oil of rose-geranium	ʒij.
Oil of patchouli	ʒss.
Oil of nutmeg	ʒiv.
Oil of lavender	ʒiij.
Oil of cloves	ʒiv.
Oil of peppermint	ʒj.
Oil of cassia	ʒij.
Tincture of sumbul	℥iij.
Honey-water	℥v.
Spirit	Oiij.

Bruise the solids and macerate in the mixed liquids for a month, then filter.

Holy Basil

Otto of rose	♏xlv.
Oil of bergamot	ʒj.
Oil of citron	ʒij.
Essence of musk	℥iv.
Tincture of storax	℥xvj.
Orange extrait	Oj.
Cassie extrait	Oj.
Jasmine extrait	Oj.
Tuberose extrait	Oj.
Spirit	Oj.
Rose extrait	℥xxv.
Tincture of Tonka	Oij.
Spirit of geranium	Oij.
Essence of vanilla	Oiiss.

Mix.

Jockey Club

I

Jasmine extrait	℥iv.
Rose extrait	℥j.
Essence of musk	℥j.
Tincture of Tonka bean	℥ij.
Rectified spirit	℥ix.

Mix.

II

Concrete cassie, washing No. 1	4 lbs.	
Concrete jasmin, washing No. 1	10 lbs.	10 oz.
Concrete tuberose, washing No. 1	9 lbs.	9 oz.
Essence of ambergris	9 lbs.	9 oz.
Essence of civet	9 lbs.	7 oz.
Essence of musk Baur	12 oz.	
Tincture of orris	60 oz.	
Essence of Peru balsam	3 oz.	
Tincture of storax	6 oz.	
Essence of rose	10 lbs.	
Essence of vanillin	1½ lb.	
Oil of bergamot	11 oz.	
Oil of cloves	½ oz.	
Oil of lavender	1 oz.	
Oil of neroli	11/16 oz.	
Oil of santal	1⅛ oz.	
Essence of heliotropol (1 in 16)	4½ oz.	
Concrete orange, washing No. 3	20 lbs.	
Rose-water	2 lbs.	

Keep this mixture for some days, shaking occasionally. Label 'Oil of Jockey Club.'

To make inexpensive bouquet, mix

Oil of Jockey Club	2¼ lbs.
Concrete cassie, washing No. 3	3¾ lbs.
Rose or ordinary water	2 lbs.

Honeysuckle

I

Oil of pimento	ʒx.
Essential oil of almonds	ʒx.
Oil of cedrat	ʒv.
Oil of origanum	ʒiij.
Otto of rose	ʒj.
Spirit	Oiv.

Mix.

II

Oil of neroli	♏xij.
Otto of rose	♏x.
Essential oil of almonds	♏viij.
Essence of musk	ʒj.
Tincture of storax	℥iv.
Essence of vanilla	℥vj.
Cassie extrait	Oj.
Rose extrait	Oj.
Tuberose extrait	Oj.
Violet extrait	Oj.

Mix.

Esprit de Jasmine

Jasmine extrait	Oj.
Essence of ambergris	ʒss.
Oil of neroli	♏viij.
Spirit	℥x.

Mix.

Hovenia

Oil of neroli	♏x.
Otto of rose	♏xl.
Oil of rose-geranium	ʒss.
Oil of cloves	ʒss.
Oil of lemon	℥ss.
Essence of musk	℥j.
Rose-water	℥x.
Spirit	Oij.

Mix.

Hyacinth

Hyacinthin	ʒj.
Oil of neroli (Bigarade)	♏x.
Essence of musk	♏ 50
Tincture of benzoin	♏c.
asmine extrait	ʒx.
Orange-flower water (triple)	ʒv.
pirit to	℥x.

Mix.

Isle of Wight Bouquet

Oil of bergamot	℥iss.
Oil of lavender	℥iss.
Oil of lemon	ʒij.
Oil of neroli	♏xl.
Otto of rose	ʒij.
Eau de Portugal	℥vj.
Ess. millefleurs	℥iv.
Essence of musk	℥iv.
Marischale	℥iv.
pirit	Oiiss.

Mix.

Fleur d'Italie

Essence of ambergris	ʒj.
Essence of musk	℥iij.
Spirit of rose	℥xvj.
Cassie extrait	℥x.
Tuberose extrait	℥x.
Jasmine extrait	℥x.
Violet extrait	Oj.
Rose extrait	Oij.

Mix.

Jonquille

Heliotropin	gr. xv.
Coumarin	gr. viij.
Oil of neroli	ʒij.
Oil of French geranium	ʒiiss.
Ess. oil of almonds	♏v.
Jasmine extrait	℥x.
Spirit	℥xxx.

Mix.

Kew Gardens Bouquet

Essence of civet	ʒj.
Essence of musk	℥iij.
Spirit of geranium	℥x.
Spirit of neroli	Oj.
Cassie extrait	℥x.
Jasmine extrait	℥x.
Rose extrait	℥x.
Tuberose extrait	℥x.
Violet extrait	℥x.

Mix.

White Lilac

I. The Old Form

Essential oil of almonds	♏v.
Essence of civet	ʒvj.
Orange-flower extrait	℥vij.
Rose extrait	℥x.
Tuberose extrait	Oj.

Mix.

A few drops of liquor violæ converts this into 'Lilac,' but the rose extrait should be omitted.

II. The New Form

Terpineol	gr. lxxv.
Spirit	℥iiss.

Dissolve and add

Oil of ylang-ylang	♏ij.
Essence of ambergris	♏xl.
Essence of musk	♏xl.
Jasmine extrait	℥vij.
Jonquil extrait	℥vij.
Orange-flower extrait	℥vij.
Rose extrait	℥vij.
Tuberose extrait	℥vij.

Mix.

Lyceum Bouquet

(May also be called by the name of any favourite actor or actress.)

Oil of lavender	ʒj.
Otto of rose	ʒj.
Oil of bergamot	ʒij.
Oil of ylang-ylang	ʒij.
Essence of musk	℥j.
Cassie extrait	℥vj.
Violet extrait	℥vj.
Jonquil extrait	℥viij.
Reseda extrait	℥viij.
Tuberose extrait	℥viij.

Mix.

White Pond Lily

Essential oil of almonds	♏ij.
Essence of vanilla	℥j.
Spirit of rose	℥j.
Jasmine extrait	℥j.
Orange-flower extrait	℥j.
Rose extrait	℥ij.
Cassie extrait	℥ij.
Tuberose extrait	℥viij.

Mix.

This is simply a variation of Lily of the Valley, and often, in fact, goes by that name.

Lily of the Valley, or Maiglöckchen

I

Jasmine extrait	℥xl.
Spirit of ylang-ylang	℥vj.
Cardamom-seeds (bruised)	℥ij.
Oil of orris	♏xx.

Macerate for a month and filter.

If the odour of the cardamoms is found to predominate, add jasmine extrait to neutralise it.

II

Essential oil of almonds	♏x.
Essence of vanilla	℥ij.
Rose extrait	℥ij.
Orange-flower extrait	℥ij.
Jasmine extrait	℥iiss.
Spirit of rose	℥iiss.
Tuberose extrait	℥xxj.

Mix.

Maids of Honour Bouquet

Oil of cloves	ʒiss.
Oil of nutmeg	ʒiss.
Oil of sandalwood	ʒij.
Oil of lavender	℥ss.
Otto of rose	ʒj.
Oil of ylang-ylang	ʒss.
Tincture of Tonka bean	℥j.
Essence of musk	℥iss.
Oil of bergamot	℥iss.
Millefleurs	℥ij.
Spirit of verbena	℥iij.
Spirit	Oivss.

Mix.

Maréchale Bouquet

Oil of cloves	♏x.
Oil of sandalwood	♏x.
Essence of musk	℥j.
Essence of ambergris	℥j.
Spirit of neroli	℥ij.
Tincture of Tonka bean	℥ij.
Essence of vanilla	℥ij.
Tincture of orris	℥ij.
Spirit of vetivert	℥ij.
Spirit of rose	℥iv.
Orange-flower extrait	℥iv.

Mix.

May Flowers

Rose extrait	℥x.
Jasmine extrait	℥x.
Orange-flower extrait	℥x.
Cassie extrait	℥x.
Essence of vanilla	℥xx.
Essential oil of almonds	ʒss.

Mix and filter through animal charcoal; or make it with vanillin essence (*vide infra*).

Magnolia Blossom

Oil of lemon	♏v.
Essential oil of almonds	♏x.
Orange-flower extrait	℥iiiss.
Rose extrait	℥vij.
Spikenard extrait	ʒxiv.
Violet extrait	ʒxiv.

Mix, set aside for several days, and filter.

Mary Stuart Bouquet

A favourite American perfume. Might be popular in Scotland as 'Mary Queen of Scots' Perfume.'

I

Ol. bergamot.	℥ij.
Ext. rosæ	℥xvj.
Ext. jasmin.	℥vj.
Ess. moschi (ʒj. to ℥xvj.).	℥iv.
Ess. ambergris (ʒj. to ℥xvj.).	℥ij.
Ess. vanillæ (ʒvj. to ℥xvj.)	℥iv.
Tr. iridis flor. (1 in 2)	℥viij.
Spt. rectificat.	℥lxiv.

M.

II

Otto of rose	ʒss.
Oil of sandalwood	ʒss.
Oil of bergamot	ʒj.
Oil of neroli	ʒij.
Tincture of benzoin	℥iv.
Tincture of orris	℥iv.
Tincture of Tonka bean	℥iv.
Essence of civet	℥iv.
Spirit of rose	℥iv.
Cassie extrait	℥iv.
Jasmine extrait	℥iv.
Rose extrait	℥iv.
Violet extrait	℥iv.
Essenee of musk	℥j.
Essence of ambergris	℥ij.

Mix.

Mignonette, or Reseda

I

Jasmine extrait	℥ij.
Cassie extrait	℥iv.
Rose extrait	℥iv.
Essence of musk	℥iv.
Violet extrait	℥xvj.

Mix.

II

Essence of musk	℥iv.
Tincture of storax	℥vj.
Orange-flower water	℥x.
Rose-water	℥x.
Violet extrait	Oj.
Jasmine extrait	Oij.
Rose extrait	Oij.
Orange-flower extrait	Oiiss.
Cassie extrait	Oivss.
Tincture of orris	Ovj.

Mix.

III

Musk	gr. viij.
Ambergris	gr. xv.
Strained storax	gr. xv.
Tonka beans	ʒss.
Nettle-leaves	ʒss.
Orris-root	℥iss.
Essential oil of almonds	♏ij.
Oil of neroli	♏x.
Otto of rose	♏x
Oil of bergamot	♏xx.
Spirit	℥x.

Macerate for a fortnight and filter, washing the marc with spirit to make 10 oz.

Midland Counties Bouquet

Jasmine extrait	℥iv.
Otto of rose	ʒiss.
Oil of bergamot	ʒiv.
Essence of vanilla	℥ij.
Essence of musk	℥ij.
Violet extrait	℥ij.
Rectified spirit	℥xvj.

Mix all except the spirit, and after standing fourteen days add the spirit and filter.

Naval Bouquet

Spirit of santal	℥x.
Essence of patchouli	℥x.
Rose extrait	℥x.
Spirit of vetivert	℥x.
Spirit of verbena	℥xiiss.

Mix.

Sometimes goes by the names 'Neptune Bouquet' and

'Navy Nosegay,' the latter with the addition of citronella oil ♏j. to the ounce.

May Bells

Jasmine extrait	℥xx.
Orange extrait	℥x.
Linaloe extrait	℥j.
Spirit of ylang-ylang	℥j.
Oil of mace	♏xl.
Tincture of orris	℥j.

Mix and filter.

Bouquet de Millefleurs

Oil of bergamot	ʒiss.
Oil of sassafras	♏xij.
Oil of cloves	♏xij.
Otto of rose	♏iv.
Lavender-water	℥j.
Cassie extrait	℥ij.
Jasmine extrait	℥j.
Orange-flower water	℥vj.
Spirit	Oj.

Mix. After a week add ʒij. of burnt alum, shake well, and filter.

Millefleurs and Lavender

Oil of lavender	ʒj.
Essence of ambergris	℥j.
Millefleurs (No. 1) to	Oj.

Mona Bouquet

I

Oil of sandalwood	♏xx.
Otto of rose	♏ 50
Oil of rose-geranium	♏xl.
Tincture of benzoin	℥j.
Essence of musk	℥j.
Essence of civet	ʒij.
Verbena extrait	℥ss.
Jasmine extrait	℥j.
Spirit	℥iv.

II

Benzoic acid	gr. vj
Oil of neroli	♏xx.
Oil of cloves	ʒiss.
Otto of rose	ʒij.
Oil of bergamot	ʒij.
Oil of sandalwood	℥ss.
Essence of musk	℥iij.
Tincture of orris	℥iv.
Orange-flower water	℥v.
Spirit to	Oij.

Millefleurs

I

Oil of neroli	ʒss.
Oil of cloves	ʒj.
Rose extrait	℥vj.
Jasmine extrait	℥vij.
Essence of vanilla	℥ij.
Essence of musk	ʒvj.
Essence of ambergris	℥j.
Lavender-water	℥ij.
Orange-flower water	℥ij.
Spirit	℥xviij.

Mix.

II

Essential oil of almonds	♏iij.
Oil of cloves	♏iij.
Oil of neroli	♏iij.
Oil of bergamot	ʒij.
Essence of ambergris	℥ss.
Essence of musk	℥ss.
Tincture of Tonka bean	℥ss.
Rose extrait	℥j.
Tincture of orris	℥ij.
Cassie extrait	℥ij.
Orange-flower extrait	℥ij.
Spirit of rose	℥iij.
Jasmine extrait	℥iv.

Mix.

Bouquet de Neroli

Oil of Tangerine orange	ʒj.
Oil of neroli	♏xl.
Essence of ambergris	ʒj.
Tincture of orris	℥v.
Spirit of rose	℥v.

Mix.

Narcissus

Tincture of storax	℥j.
Tincture of tolu	℥j.
Jonquil extrait	℥xv.
Tuberose extrait	Oj.

Mix.

Musk Bouquet

I

Otto of rose	♏xv.
Tincture of tolu	℥j.
Essence of musk	℥xij.
Jasmine extrait to	Oiv.

Mix.

II

Essence of civet	℥j.
Spirit of rose	℥iv.
Essence of musk	℥xj.

Mix.

These essences are for retail as musk perfume, and are preferred for the handkerchief to the plain essence.

New-mown Hay

I

Oil of bergamot	♏xl.
Oil of rose-geranium	♏xl.
Tincture of benzoin	℥j.
Essence of musk	℥j.
Spirit of rose	℥j.
Spirit	℥j.
Tincture of Tonka bean	℥iv.

Mix.

II

Vanillin	gr. j.
Coumarin	gr. ij.
Tincture of orris	℥ij.
Spirit of rose	℥ij.

Mix.

III

Oil of neroli	♏x.
Oil of rose-geranium	ʒj.
Rose extrait	℥ij.
pirit of rose	℥ij.
asmine extrait	℥ij.
pirit	℥iv.
incture of Tonka bean	℥vj.

Mix.

There are many varieties of this erfume, perhaps the easiest made ossible. Extemporaneously, it is ometimes prepared by mixing equal arts of Jockey Club, tincture of onka bean, and spirit.

Opoponax

This perfume, popularised by iesse, is said to owe its peculiar dour to the oil distilled from oponax resin, a hardened milky udation from the root of *Bal-modendron Kafal* (probably). hether this is so or not, the fact is worthy of record that the true resin comes into the market on very rare occasions only. The first formula given is that published by Piesse; the second provides a better product:—

I

Grain musk	℥j.
Vanilla	℥viij.
Tonka beans	℥iv.
Spirit	Ox.

Macerate for a month and add to the filtrate

Tincture of orris	Oiv.
Millefleurs extrait	Oviij.
‘Citron zeste’	℥ij.
Oil of bergamot	℥ij.
Otto of rose	℥iss.
Oil of opoponax	℥ss.

Mix.

II

Grain musk	ʒss.
Vanilla	℥ss.
Tonka beans	ʒij.
Spirit	℥xxv.

Macerate for a month and add

Oil of citron	ʒj.
Oil of bergamot	ʒj.
Oil of citronella	♏xv.
Oil of lemon	♏xv.
Otto of rose	♏ 50
Oil of patchouli	ʒss.
Violet extrait	℥xvj.
Rose extrait	℥x.
Tincture of orris	℥x.
Cassie extrait	℥v.
Orange-flower extrait	℥v.

Mix.

Osborne Bouquet

Otto of rose	♏ 50
Essence of musk	℥j.
Essence of ambergris	℥ij.
Spirit of vetivert	℥iij.
Spirit of santal	℥v.
Jasmine extrait	℥vij.
Tincture of orris	℥x.
Violet extrait	℥x.
Cassie extrait	℥xv.

Mix.

Oriental Bouquet

Oil of lavender	♏c.
Otto of rose	ʒj.
Jasmine extrait	℥iiss.
Essence of vanilla	℥iiss.
Spirit to	Oij.

Mix.

Oxford and Cambridge Bouquet

Oil of lemon	♏xl.
Oil of bergamot	ʒj.
Tincture of storax	℥j.
Essence of musk	℥iij.
Essence of patchouli	℥iij.
Spirit of geranium	℥iv.
Essence of vanilla	℥v.
Spirit of santal	℥v.
Spirit of rose	℥x.
Cassie extrait	℥x.
Jasmine extrait	℥x.
Rose extrait	℥x.
Tuberose extrait	℥x.
Violet extrait	Oj.

Mix.

Lady Palmerston's Bouquet

Ol. rosæ virgin.	ʒij.
Extrait violæ	℥vij.
Extrait jasmin.	℥viiss.
Extrait cassiæ	℥viss.
Ol. bergamot.	ʒivss.
Ol. cassiæ	♏x.
Ol. santal. flav.	♏x.
Ol. caryoph.	♏xvj.
Ambergris	gr. xv.
Moschi	gr. xiij.
Sacchari albi	gr. viij.
Balsam. peruv.	♏xij.
Spt. rectificat.	Oij.

Macerate fourteen days and filter.

Essence of Patchouli

I

Oil of patchouli	ʒiiss.
Otto of rose	♏xx.
Jasmine extrait	℥ij.
Spirit	Oj.

Mix.

II

Oil of patchouli	ʒj.
Jockey Club	℥vj.
Jasmine extrait	℥ij.
Rectified spirit	℥viij.

Mix.

Orange-flower Bouquet

Essence of musk	℥ij.
Cassie extrait	℥ij.
Orange-flower extrait	℥xij.

Mix.

Persian Essence

Oil of bergamot	ʒvj. ♏xl.
Oil of lemon	ʒv.
Oil of lavender	ʒiij. ♏xx.
Otto of rose	ʒj. ♏xx.
Oil of cloves	♏xl.
Essential oil of nutmeg	ʒiij. ♏xx.
Essence of musk	℥iiss.
Spirit	Oj.

Mix.

Sweet Pea

I

Tincture of Tonka bean	℥j.
Spirit of rose	℥v.
Orange-flower extrait	℥v.
Tuberose extrait	℥v.

Mix.

II

Otto of rose	♏viij.
Tincture of storax	ʒj.
Essence of vanilla	ʒij.
Violet extrait	℥vij.
Rose extrait	℥x.
Orange-flower extrait	℥x.
Tuberose extrait	℥xiij.

Mix.

Pine Bouquet

Olei pini sylvestris	℥iiss.
Olei juniperi	ʒiiss.
Olei rosmarini	♏lxxx.
Olei lavandulæ	♏xlv.
Olei limonis	ʒss.
Spt. rectificat. ad	Oij.

M.

Pinafore Bouquet

Oil of coriander	♏x.
Oil of thyme	♏x.
Oil of melissa	♏xx.
Oil of cardamoms	♏xl.
Oil of citron	ʒj.
Oil of bergamot	ʒij.
Essence of musk	℥j.
Spirit of neroli	℥viij.
Violet extrait	℥xij.
Spirit of rose	℥xvj.

Mix.

Queen-of-the-Night Bouquet

Jasmine extrait	℥x.
Violet extrait	℥xij.
Rose extrait	℥vij.
Reseda extrait	℥ij.
Jonquil extrait	℥ij.
Orange-flower extrait	℥j.
Essence of musk	℥j.
Essence of civet	℥ss.
Tincture of vanilla	ʒiij.
Oil of ylang-ylang	ʒj.
Oil of cedar	♏xij.
Oil of cloves	♏viij.
Oil of geranium	♏iv.
Rectified spirit	℥ss.

Dissolve the oils in the spirit and add to the rest of the ingredients mixed in the order given.

Rondeletia

Otto of rose	ʒj.
Oil of bergamot	ʒv.
Oil of cloves	ʒvj.
Oil of lavender	ʒxj.
Essence of ambergris	℥iiss.
Essence of musk	℥iiss.
Essence of vanilla	℥iiss.
Spirit to	Oiij.

Mix.

Damask Rose Bouquet

Essence of vanilla	℥j.
Essence of musk	℥ij.
Tincture of Tonka bean	℥ij.
Spirit of rose	℥viij.
Tuberose extrait	℥viij.

Mix.

Moss Rose

I

Otto of rose	ʒiss.
Essence of ambergris	℥iiss.
Essence of musk	℥j.
Rose-water (triple)	℥v.
Rectified spirit	Oj.

Mix and allow to stand for at least a week before filtering.

II

Essence of civet	℥ij.
Essence of musk	℥iv.
Spirit of rose	Oj.
Orange-flower extrait	Oj.
Jasmine extrait	Oj.
Violet extrait	Oj.
Rose extrait	Oij.

Mix.

Tea Rose

Tincture of orris	℥v.
Spirit of neroli	℥v.
Spirit of santal	℥x.
Spirit of geranium	Oj.
Spirit of rose	Oj.
Rose extrait	Oj.

Mix.

Sometimes an ounce of tincture of storax is added to each pint of this perfume with good effect.

White Rose

I

Oil of patchouli	♏iij.
Oil of rose-geranium	♏x.
Otto of rose	♏xxv.
Tincture of orris	℥ij.
Water	℥j.
Spirit to	℥v.

Mix.

II

Spirit of rose	℥iv.
Violet extrait	℥ij.
Jasmine extrait	℥j.
Essence of patchouli	℥ss.

Mix.

III

Concrete jasmine, washing No. 1	2 lbs. 5 oz.
Concrete violet, washing No. 3	2 lbs. 7 oz.
Concrete violet, washing No. 1	1 lb. 2 oz.
Oil of neroli	10 gr.
Oil of asarum canadense	20 gr.
Oil of rose-geranium	½ dr.
Essence of rose	1½ lb.
Tincture of orris	½ oz.

All by weight. Mix, let stand for two hours, then add 1 lb. of rose-water in small quantities, shaking well after each addition. Let stand for twenty-four hours, and filter through linen and finely-powdered fullers' earth.

IV

Rose extrait	℥xiiss.
Violet extrait	℥iiss.
Spirit of santal	ʒx.
Jasmine extrait	ʒx.

Mix.

Yellow Rose

Essence of musk	℥iij.
Spirit of verbena	℥iv.
Tincture of Tonka bean	℥v.
Violet extrait	℥x.
Spirit of rose	℥xv.
Rose extrait	Oiss.
Tuberose extrait	Oiss.

Mix.

Royal Extract of Flowers

Orris-root (bruised)	℥iv.
Yellow sandalwood	℥ss.
Grain musk	gr. iv.
Oil of cloves	♏xx.
Oil of pimento	♏xx.
Oil of lemon	ʒij.
Oil of lavender	ʒij.
Oil of bergamot	ʒiv.
Essence of ambergris	ʒiv.
Violette de Parme extrait	℥viij.
Jasmine extrait	℥viij.
Spirit	Oij.

Macerate for fourteen days and filter.

Royal Essence

Ambergris	℈iv.
Grain musk	℈ij.
Civet	℈j.
Oil of cinnamon	♏xij.
Oil of rhodium	♏viij.
Otto of rose	♏viij.
Spirit	℥viij.

Macerate a month and filter.

Essentia Odorata

This perfume may be called by any fanciful name which the maker chooses.

Oil of lavender	ʒiss.
Oil of cloves	♏xlv.
Oil of bergamot	♏ 50
Oil of cassia	ʒss.
Oil of neroli	♏xx.
Spirit	℥j.
Royal essence	℥viij.

Mix.

The Ryde Bouquet

Ol. limonis	ʒj.
Ol. rosæ virgin.	♏lxxx.
Ol. amygdal. amar. ess.	♏vij.
Ol. aurant. flor.	♏xxx.
Moschi gran.	gr. xiv.
Rad. iridis cont.	℥iij.
Fabæ tonkinensis cont.	ʒij.
Extrait jasmin.	℥iv.
Spt. rectificat.	℥xliv.

Macerate for seven days and filter.

Sicilian Essence

'A splendid perfume, suitable for the nobility.'

Ol. lavand. ang.	ʒiij.
Ol. caryoph. ang.	ʒss.
Ol. bergamot.	ʒiv.
Ol. santal. flav.	♏xx.
Ol. rosæ virgin.	ʒj.
Ess. ambergris	ʒiv.
Ess. moschi	ʒxij.
Heliotrop. (No. 3)	ʒiv.
Extrait Maréchale	ʒj.
Spt. rectificat.	℥vij.

M.

Spring Flowers

I

Oil of bergamot	ʒj.
Essence of ambergris	℥j.
Cassie extrait	℥j.
Spirit of rose	℥j.
Violet extrait	℥vj.
Rose extrait	℥vij.

Mix.

II

Oil of verbena	♏xl.
Oil of rose-geranium	♏xxxv.
Oil of sandalwood	♏xxv.
Oil of lavender	♏xx.
Oil of bergamot	ʒij.
Otto of rose	♏v.
Oil of neroli	♏v.
Tincture of Tonka bean	℥j.
Ess. millefleur	℥iss.
Essence of vanilla	ʒiv.
Orange-flower extrait	℥iss.
Essence of musk	℥ss.
Concentrated rose-water	℥ij.
Spirit to	Oj.

Mix.

Stephanotis

Otto of rose	ʒss.
Oil of neroli	ʒss.
Oil of bergamot	ʒj.
Cassie extrait	℥iv.
Tuberose extrait	℥iv.
Tincture of benzoin	℥iv.
Tincture of storax	℥iv.
Tincture of Tonka bean	℥iij.
Tincture of orris	℥viij.
Spirit	Oj.
Essence of musk	Oiss.
Jasmine extrait	Oiss.

Mix.

Upper Ten Bouquet

Oil of lemon	♏xv.
Oil of bergamot	ʒiss.
Orange-flower extrait	℥iij.
Spirit of rose	℥iij.
Essence of ambergris	℥iij.
Tincture of orris	℥iij.
Tincture of vanilla	℥iv.

Mix.

Verbena

Oil of neroli	ʒss.
Oil of lemongrass	ʒiij.
Oil of lemon	℥ss.
Orange-flower extrait	℥iiss.
Spirit of rose	℥iiss.
Spirit to	Oj.

Mix.

Victoria Bouquet

Essential oil of almonds	♏iij.
Oil of neroli	♏iv.
Otto of rose	♏xvj.
Oil of cinnamon	♏vj.
Oil of cloves	ʒj.
Oil of lemon	ʒij.
Oil of bergamot	ʒij.
Millefleurs	ʒij.
Violet extrait	ʒij.
Jasmine extrait	ʒij.
Essence of musk	ʒiij.
Essence of ambergris	ʒiij.
Spirit	℥xij.

Mix.

Violet Bouquet

This and other violet perfumes should be coloured with chlorophyll, or with ext. cannabis indicæ if chlorophyll is not at hand. On the manufacturing scale, oil of orris is much used (Horner's otto is very fine). *Ionone* and other artificial violet perfumes need the natural odour as well.

Tincture of benzoin	℥j.
Tincture of orris	℥j.
Essence of musk	℥ij.
Jasmine extrait	℥ij.
Cassie extrait	℥iv.
Rose extrait	℥iv.
Violet extrait to	Oiss.

Mix.

Violette de Parme

I

Ionone	ʒiss.
Tincture of orris	℥v.
Tincture of Indian hemp	♏xx.
Spirit	℥xv.

Mix.

II

Essential oil of almonds	♏x.
Oil of neroli	♏x.
Ionone	ʒij.
Tincture of benzoin	ʒij.
Violet extrait	℥j.
Jasmine extrait	℥j.
Rectified spirit	℥xvj.
Water	℥iv.

Mix, colour with ext. cannab. ind., and filter.

Wood Violet

I

Cassie extrait	℥vj.
Rose extrait	℥iij.
Tuberose extrait	℥iij.
Violet extrait	℥iv.
Essential oil of almonds	♏xv.

Mix, add a little ext. cannab. ind. to colour, and filter.

II

Concrete jasmine, washing No. 3	3 lbs.
Essence of orris (1 per cent.)	5 oz.
Essence of artificial musk	7 oz.
Oil of lignaloe	♏x.
Oil of bergamot	♏x.
Oil of lemon	♏xij.
Rose-water	40 oz.

Mix, and after three days filter through fullers' earth.

Volunteer's Garland

Oil of cloves	♏x.
Otto of rose	♏ 50
Oil of rose-geranium	ʒj.
Oil of neroli	ʒij.
Oil of lavender	ʒij.
Oil of bergamot	ʒij.
Essence of civet	℥ss.
Essence of ambergris	℥ss.
Essence of musk	℥ij.
Jasmine extrait	℥vij.
Cassie extrait	℥vij.
Violet extrait	℥x.
Tincture of orris	Oj.
Spirit	Oj.

Mix.

Wallflower

Orange-flower extrait	Oj.
Essence of vanilla	℥x.
Tincture of orris	℥x.
Cassie extrait	℥x.
Spirit of rose	Oj.
Essential oil of almonds	♏v.

Mix.

West-end Bouquet

Oil of sandalwood	♏xx.
Spirit of verbena	℥j.
Essence of civet	℥j.
Essence of musk	℥ij.
Tincture of benzoin	℥ij.
Spirit of rose	℥vj.

Mix.

Windsor Castle Bouquet

Otto of rose	ʒij.
Oil of neroli	ʒij.
Oil of lavender	ʒij.
Oil of bergamot	ʒij.
Oil of cloves	♏viij.
Essence of musk	℥iiss.
Essence of ambergris	℥iiss.
Jasmine extrait	Oj.
Tincture of orris	Oj.
Spirit	Oj.

Mix.

X Y Z Bouquets

Under this heading we group a number of formulas for unnamed perfumes, so that chemists may select one or other for local or special names. Some of the old-fashioned bouquets which have already been given may also be utilised for the same purpose.

I

Oil of lemon	ʒss.
Otto of rose	♏xl.
Oil of neroli	♏xv.
Orris-root	ʒiss.
Tonka beans	ʒj.
Musk	gr. vij.
Spirit	℥xxiv.

Macerate for seven days and filter.

II

(A Superior Bouquet)

Oil of bergamot	♏ 50
Oil of lemon	♏v.
Oil of lavender	♏iij.
Oil of cloves	♏j.
Tincture of orris	℥ss.
Essence of civet	ʒj.
Coumarin	gr. j.
Heliotropin	gr. ¼
Jasmine extrait	℥iss.
Spirit	℥v.

Mix, and after ten days filter.

III

Oil of lemon	ʒij.
Oil of bergamot	ʒij.
Essence of musk	ʒij.
English oil of lavender	♏xx.
Oil of pimento	♏xx.
Oil of neroli	♏xx.
Otto of rose	♏x.
Oil of cinnamon	♏iij.
Essential oil of almonds	♏iij.
Oil of caraway	♏iij.
Grain musk	gr. v.
Rectified spirit	℥viij.

Allow to stand ten days, and filter.

IV

Oil of bergamot	ʒv.
Oil of neroli	ʒv.
Oil of lemongrass	ʒv.
Oil of ylang-ylang	℥j.
Oil of rose-geranium	♏iij.
Otto of rose	♏xl.
Tincture of orris	Oj.
Spirit	Ov.

Mix, and add

Essence of musk	ʒv.
Tincture of benzoin	℥iss.
New milk	℥ix.

Shake well, filter, set aside in a cool place for at least twenty days, then add 10 minims of oil of patchouli dissolved in an ounce of rectified spirit.

V

Otto of rose	℥ss.
Grain musk	gr. vj.
Spirit	℥vj.

Mix, and filter after three weeks.

VI

Otto of rose	ʒviss.
Essence of patchouli	℥iv.
Jasmine extrait	℥v.
Violet extrait	Oj.
Spirit	Oiij.

Mix.

Yacht Club Bouquet

Benzoic acid	ʒij.
Spirit of santal	Oj.
Spirit of neroli	Oj.
Jasmine extrait	℥x.
Spirit of rose	℥x.
Essence of vanilla	℥v.

Mix.

Ylang-ylang

I

Oil of ylang-ylang	♏x.
Otto of rose	♏ij.
Oil of neroli	♏x.
Essence of musk	℥ss.
Jasmine extrait	℥ij.
Orange-flower water	ʒij.

Mix.

II

Oil of neroli	♏vj.
Oil of lemon	♏vj.
Otto of rose	♏xv.
Oil of ylang-ylang	♏ 50
Essence of musk	ʒss.
Spirit to	Oij.

Mix.

III

Essence of civet	℥j.
Jasmine extrait	ʒj.
Spirit of rose	℥ij.
Spirit of ylang-ylang to	℥x.

Mix.

SYNTHETIC PERFUMES

Since the year 1885 much progress has been made in the synthesis of aromatic compounds allied to camphor and essential oils generally, with the result that there are now available to perfumers a number of highly-concentrated substances of definite composition and fine aroma. The practical information obtainable regarding these is not voluminous, but such as it is we give it concisely; and we also include several so-called synthetic substances which are mixtures of odorous compounds with acetanilide.

Ambraine.—Stated to be a mixture of coumarin 15 parts and acetanilide 85 parts, with a trace of benzoic or cinnamic ethyl ester.

Aubépine (crystals and liquid).—This is anisic aldehyde. It has the odour of hawthorn or May blossom. The liquid aubépine is soluble in rectified spirit and in oils, and is used for liquid perfumes and soaps. The crystals are used in sachet-making. Anisic aldehyde is para-methoxybenzaldehyde [$C_6H_4(OCH_3)CHO$], and is prepared by digesting *p*-hydroxybenzaldehyde with alcoholic potash and methyl iodide. When pure it is liquid at 15° C. (sp. gr. 1·126), and boils at 248° C. The commercial product boils at 245° C. Exposed to the air it is oxidised to anisic acid. The crystallised aubépine is a mixture. This artificial perfume blends well with orange, petitgrain, and similar odours. A similar synthetic perfume is called *crategine.*

Benzaldehyde (C_6H_5COH) is an artificial oil of bitter almonds, sp. gr. 1·050 at 15° C. when pure, b.p. 179° C., soluble in alcohol, but very sparingly in water. Common artificial oil of bitter almonds is nitro-benzol, or oil of mirbane.

Bergamiol (linalyl acetate, $C_{10}H_{17}OCH_3CO$) constitutes about 40 per cent. of bergamot oil, and alone or as the alcohol (linalool) occurs in other oils. The ester is prepared synthetically, and is a colourless liquid about three times the strength of bergamot oil.

Bigarol.—An orange-scented powder containing 15 per cent. of nerolin diluted with acetanilide.

Bornyl Acetate is a crystalline synthetic body with the odour of pine-needle oil.

Bouquet des Champs, or meadowsweet, is offered in two forms—(1) for liquid perfumes, and (2) for soapmaking.

Cinnamic Aldehyde ($C_6H_5.CH.CH.COH$), the active principle of oils of cinnamon and cassia, is now made synthetically by Schimmel, of Leipzig.

Citral ($C_{10}H_{16}O$) is one of the three known important odorous principles of oil of lemon, and was supposed to be the peculiar principle, until Messrs. Umney and Swinton recently isolated a geraniol ester from the oil, which supplies the lemon aroma missing from citral. Citral also occurs in many other oils, especially that of lemongrass (*Andropogon citratus*), from which much of the commercial citral is supposed to be obtained. It can also be made by the oxidation of geraniol. Citral is principally used in making ionone. It has a specific gravity of 0·895 at 15° C., and dissolves readily in rectified spirit.

Coumarin is the peculiar odour of Tonka bean, new-mown hay, and many other plant products. It is now extensively made by the action of sodium hydroxide upon phenol in chloroformic solution, whereby a sodium salt of salicylaldehyde is obtained, which, in its turn, is acetylated, and the acetyl compound [$C_6H_4(O.CO.CH_3)COH$], on heating to a high temperature, is split up into coumarin [$C_6H_4(OCO.CH)CH$] and water. It occurs in fine white crystals, which melt at 67° C. It is identical in every respect with the coumarin extracted from Tonka bean, and 1 part of it is equal to 50 parts of the bean. It is freely soluble in spirit and oils, and when used in liquid perfumes some extrait, or its own weight of a fixed oil, should be used with it in order to keep it from dissipating too quickly when the spirit evaporates. Tonka bean contains a fat which retains the coumarin, so that it seems to last longer than the synthetic stuff; hence the need for the addition.

Eugenol [$C_6H_3(OCH_3)OH.C_3H_5$] is the most important constituent of oil of cloves, and resembles it in odour, &c. It is used for making vanillin. Sp. gr. 1·070 at 15° C., b.p. 253–254° C. It dissolves clear in 2 per cent. potash solution.

Foin Coupé (new-mown hay) is a white crystalline powder made by La Société Chemique des Usines du Rhone. It appears to be a coumarin mixture.

Gaultheriol is methyl salicylate, the ester of wintergreen oil. It is now made artificially. Sp. gr. 1·187 at 15° C. and b.p. (of the commercial product) 219–222°.

Geraniol ($C_{10}H_{18}O$) is the odorous principle of otto of rose, and is also contained in citronella, geranium, lemongrass, neroli, palmarosa, and ylang-ylang oils. It is a colourless liquid with a delicious rose odour, sp. gr. 0·882–0·885 at 15° C., b.p. 230° C., freely soluble in rectified spirit; strength the same as otto of rose. It is made by Schimmel.

Geranyl Acetate is the acetyl derivative of the foregoing. It is a spirit-soluble liquid, having the combined odours of bergamot, lavender, and petitgrain.

Heliotropin or **Piperonal** [$C_6H_3(O_2CH_2)COH$] is found in commerce in various forms—liquid, paste, and crystals—the odours varying as the conditions. Different names are also given to the products. Pure heliotropin occurs in fine white crystals, which melt at 37° C. It has the delightful odour of heliotrope, and is much used for perfuming pomades, toilet-creams, lip-salves, and soaps. It blends well with other odours, such as bergamot, lemon, and coumarin. The powder has a sweeter odour than the crystals, but is not pure piperonal, which is white or straw coloured, and is less soluble in rectified spirit (1 in 15) than the crystals (1 in 5). 'Heliotrop' is a mixture of 1 part of heliotropin and 3 parts of acetanilide.

Hyacinthin is said to be a mixture of chlorinated bodies, aldehydes, &c. Cinnamic alcohol has a similar odour.

Ionone ($C_{13}H_{20}O$) is the artificial violet perfume, first made by Tiemann and Krüger by the interaction of acetone, citral, and baryta-water, whereby pseudo-ionone is obtained, and this ketone, on treatment with dilute sulphuric acid, is converted into the isomeric ionone. It is a liquid, sp. gr. 0·935 at 20° C., and boiling at 126° C. (12 mm. pressure). Owing to its intensely powerful odour, it is sent into commerce as a 10-per-cent. solution in alcohol, and this solution is known commercially as 'Ionone.' One per cent. of this solution in spirit gives a perfume equal in strength to triple extrait à la violette. Half as much otto of orris is a desirable addition. From 1 to 2 oz. suffices for 1 cwt. of exceptionally high-class toilet-soap. 'The preparation of a really high-class ionone scent,' says Schimmel, 'remains an art in the true sense of the word, and none but expert perfumers should attempt it. We often hear the opinion expressed that a good violet extrait can be obtained by simply diluting ionone solution with alcohol. This is quite wrong. To employ ionone successfully it is, above all, necessary to know its peculiar characteristics and to take them into account. The principal necessity in the employment of ionone is to find the proper measure of dilution. In scenting powders, sachets, and the like, the commercial solution requires to be further diluted before it is sprinkled upon the goods. In this case the use of a spray is recommended.'

Irisol.—A mixture of otto of orris and acetanilide ($2\frac{1}{2}$ per cent. of the otto).

Lilacine, or **Terpineol** ($C_{10}H_{17}OH$), is a viscid liquid, sp. gr. 0·940, and b.p. 216–218° C. It has a delightful lilac odour, but is also used in compounding lily-of-the-valley, hyacinth, and May-blossom perfumes. Half an ounce suffices for a pint of spirit, with some floral extrait to round it off. Ten ounces is required for 1 cwt. of soap, in combination with heliotropin,.ylang-ylang, geranium, or similar oils.

Linalool, the active constituent of linaloe oil, and present n bergamot, lavender, and other oils, is a colourless liquid, p. gr. 0·878, soluble in alcohol. Its odour recalls rose and emon Makes a nice perfume with nerolin.

Muguet.—An artificial lily perfume, the composition of which is said to be identical with terpineol.

Musc Baur.—An artificial musk occurring in white crystals. t is a tri-nitro derivative of a butyl toluol, and has the formula $C_6H(CH_3)(C_4H_9)(NO_2)_3$. It is principally used in soap-making, alkalies in trace assisting in developing the odour. It s good also for making sachets, but not so nice in solution. Use about 5 gr. to 1 cwt. of soap along with other perfumes.

Nerolin.—The artificial odour of orange-flowers. Occurs in white crystals equal in strength to oil of neroli. Schimmel has produced a 'Neroli,' 1½ part of which is said to be equal to 100 parts of neroli oil; but we understand that it is now put on the market much weaker than this. It is used for making Eau de Cologne and other perfumes, and for scenting soap.

Niobe Oil.—This is methyl benzoate. Sp. gr. 1·095 at 15° C., and b.p. 198° C.

Œillet, or artificial carnation, is a viscid, amber-coloured oil, and is, apparently, a mixture.

Rhodinol, or synthetic rose, occurs in two forms—(I.) a colourless liquid, for soaps, 'extraits,' and oils; (II.) more concentrated and more refined than Rhodinol I. This refers to one brand of the commercial article. Chemically rhodinol is an alcohol ($C_{10}H_{20}O$), and is obtained from rose-geranium and other oils. It is also called Citronellol and Réuniol. Commercial rhodinol is said to be a mixture of about 3 parts of geraniol and 1 part of true rhodinol. Commercial réuniol is a similar mixture in different proportions.

Safrol.—Obtained from Japanese camphor oil. Used in soap-making.

Vanillin ($C_6H_3.OH.OCH_3.COH$), the odorous principle of vanilla, is now largely produced artificially by several manufacturers. The starting-point is eugenol, which is acetylated with acetic anhydride; the aceteugenol in acetic solution is then oxidised with potassium permanganate, filtered, and the filtrate neutralised, evaporated, and the residue acidified and extracted with ether. The ethereal solution is then treated with acid sulphite of sodium, and the double sulphite separated and split up with sulphuric acid, the vanillin being extracted with ether. The purified vanillin occurs in fine white crystals. It has the odour of vanilla in an intense degree. The following notes by Schimmel give an idea of its capabilities:—'Vanillin is easily soluble in concentrated and dilute alcohol; also in water (especially hot water), ether, glycerine, and petroleum jelly. In confectionery and chocolate making vanillin can most advantageously be used in the form of a 2½-per-cent. Vanillin

Sugar which, weight for weight, equals in aroma the best vanilla, and should be used in precisely the same manner. To make this take of crystallised vanillin ʒvj., and dissolve in ℥iv. of absolute alcohol; pour this solution upon 2 lbs. 2 oz. of the finest sugar, and mix it thoroughly, in order o distribute it equally. After evaporating the alcohol in a warm place, and when the sugar has become thoroughly dry, powder it in an earthenware mortar and sift. It is then ready for use, and may be kept an indefinite time without losing aroma. For liqueur-making vanillin is best used in the form of a 2½-per-cent. Vanillin Essence, which, bulk for bulk, equals he best vanilla. To make it dissolve vanillin ʒvj. in rectified spirit ℥xxv., and add distilled water ℥x.' This essence may be used in making colourless perfumes instead of essence of vanilla.

PERFUMED WATERS

These are of very ancient date, and do not differ much in eneral composition from other handkerchief perfumes, except hat floral pomades are rarely used in making them. Why hese perfumes obtained the title 'waters' it would be difficult o tell. For centuries they have contained alcohol, and for enturies it has been known that this is a highly essential ngredient if permanence and quality are to be ensured. Thus, ohn Baptista Porta, a Neapolitan of the seventeenth century, n his work on 'Natural Magic,' says :—

> Wine, although it be not ſweet of it ſelf, yet being placed nigh any odour, will draw it, becauſe it is full of heat, which doth attract. Water being cold nature, can neither attract, nor receive, nor keep any ſent; for it is ſo fine, nder and thin, that the odour flieth out again, and vaniſheth away, as if there ere no foundation whereon it could fix and ſettle, as there is in Wine and Oyl, ho are more tenacious of ſent, becauſe they are of a denſer and callous Body. yl is the beſt preſerver and keeper of ſent, becauſe it is not changeable; where-re Perfumers ſteep their perfumes in Oyl, that it may ſuck out their ſweetness. e uſe wine to Extract the ſent of Flowers; and eſpecially *Aqua Vitæ*.

Porta proceeds to show the application of these principles a formula for 'Musk-water.' 'This water,' writeth the uthor,

> tteth off all others, and maketh them richer; wherefore it is firſt to be ade. Take the beſt *Aqua Vitæ* and put into it ſome Grains of Muſk, Amber

and Civet, and ſet them in the Sun for ſome dayes; but ſtop the veſſel very cloſe, and lute it; for that will very much add to the fragrancy of it.

From 'the leaves of lilies, jasmine, musk-roses, lavender-flowers, myrtle-flowers,' &c., the 'sweet sent' was extracted in the same manner. It is evident from this that these perfumes were not 'waters' in the proper sense of the term, but spirituous solutions of essential oils. A considerable number of them were at one time popular, and it is only within the last two generations that 'bouquets' derived from floral pomades have replaced them. A few of the old scents remain popular; lavender-water and Eau de Cologne between them supply the bulk of scent used by the public, and there is still some use for honey-water, while ess. bouquet appears to be a refinement of the Water of Bouquet which was famous at the beginning of this century.

It may not be unprofitable to give the formulas for some of these obsolete waters, if for no other purpose than to rescue them from oblivion.

Bouquet's Water

Take of the flowers of white lilies and Spanish jessamin, of each ½ lb.; orange flowers and those of the jonquil and pink, of each 4 oz.; damask roses, 1 lb. Let them be fresh gathered and immediately put into a glass alembic with a gallon of clean proof spirit and 2 quarts of water. Distil off till the faints begin to rise.

Cyprus Water, or Eau de Cypre

Take of the essence of ambergris ½ oz., put into a glass alembic with 1 gallon of spirit of wine and 2 quarts of water. Distil a gallon.

Honey-water (Aqua Mellis).—An ancient preparation was made by the destructive distillation of honey (*see* page 179). It was used for centuries as a hair stimulant, and was replaced by a perfumed toilet-water, first made by Mr. George Wilson, a 'faithful chemist,' for King James II. as follows:—

Best honey	1 lb.
Coriander-seed	1 lb.
Cloves	1½ oz.
Nutmegs	1 oz.
Gum benjamin	1 oz.
Storax	1 oz.
Vanilloes	No. 4

The yellow rind of three large lemons.

Bruise the cloves, nutmegs, coriander-seed, and benjamin, cut th vanilloes in pieces, and put all into a glass alembic with 1 gallon of Frenc brandy, and, after digesting forty-eight hours, draw off the spirit by distillation. To 1 gallon of the distilled spirit add

Damask-rose water	1¼ lb.
Orange-flower water	1½ lb.
Musk	5 gr.
Ambergris	5 gr.

Grind the musk and ambergris in a glass mortar, and afterwards put all together into a large matrass and let them circulate three days and three nights in a gentle heat; then let all cool. Filter, and keep the water in bottles well stopped.

With this compare the following formulas, which are good examples of those now in use:—

I

Gum. benzoin.	℥xvj.
Styracis calam.	℥iv.
Caryophylli	℥viij.
Calami arom. radic.	℥xij.
Cort. aurant.	℥xij.
Sem. coriand.	℥xij.
Rad. iridis flor.	℥viij.
Fabæ tonkæ	℥ij.
Spt. rectificat.	Ovj.
Aq. flor. aurant.	Oij.
Aq. rosæ	Oij.

Macerate for forty days and filter. Distil the filtrate.

II

Oil of cloves	ʒiiss.
Oil of bergamot	ʒx.
English oil of lavender	ʒiiss.
Musk	gr. iv.
Yellow sandalwood	ʒiiss.
Rectified spirit	℥xxxij.
Rose-water	℥viij.
Orange-flower water	℥viij.
English honey	℥ij.

Macerate the musk and sandalwood in the spirit seven days, filter, dissolve the oils in the filtrate, add the other ingredients, shake well, and do so occasionally, keeping as long as possible before filtering.

III

Ol. bergam.	ʒiss.
Ol. limonis	ʒj.
Ol. lavand.	gtt. xlv.
Ol. caryoph.	gtt. xlv.
Spt. rectificat.	℥viij.
Tr. iridis flor.	℥iv.
Aq. flor. aurant.	℥iv.

M.

IV

English oil of lavender	ʒij.
Oil of lemon	ʒij.
Oil of bergamot	ʒij.
Essence of ambergris	ʒij.
Essence of musk	ʒij.
Essential oil of almonds	♏ij.
Oil of neroli	♏ij.
Oil of cinnamon	♏iv.
Oil of cloves	♏iv.
Oil of nutmeg	♏iv.
Otto of rose	♏iv.
Essence of millefleurs	℥ss.
Orange-flower water	℥x.
Rectified spirit to	Oiss.

Mix.

The ancient honey-water for the hair was made by mixing honey 4 lbs. with dry sand 2 lbs. and distilling with a very gentle heat. It is a yellowish acid water. Sir E. Wilson, who greatly revived the use of honey-water, meant the perfumed water to be used for his celebrated hair-lotion.

Hungary-water.—So called (Eau de la Reine de Hongrie) from the formula being given by a hermit to a queen of Hungary.

The Old Recipe

Take of the flowering tops, with the leaves and flowers of rosemary, 14 lbs.; rectified spirit, 11½ gals.; water, 1 gal. Distil off 10 gals.

Some add lavender-flowers, and others Florentine orris-root; but what is most esteemed is made with rosemary only.

The Modern Perversion

Oil of peppermint	ʒss.
Oil of lemon	℥j.
Oil of melissa	℥j.
Oil of rosemary	℥ij.
Orange-flower extrait	℥xvj.
Rose extrait	℥xvj.
Rectified spirit	Cong. j.

Mix.

Spt. rosmarini, B.P., is sometimes given for aqua hungaricæ, also ol. rosmar. ʒx., ol. limon. ʒiiiss., S.V.R. ℥xxx.; and we have also seen rose-water given along with sulphate of zinc for eye-lotions. Many formulas exist, however.

L'Eau sans Pareille

Oil of cedrat	ʒij.
Oil of bergamot	ʒij.
Oil of orange	ʒij.
Oil of lemon	ʒij.
Rectified spirit	Cong. j.
Water	Oiv.

Distil 1 gal.

Eau de Vestale, or Vestal Water

'Take of the seeds of *Daucus creticus*, or Candy carrots, 2 oz.; spirit of wine, 1 gallon; water, 2 quarts. Distil until the faints begin to rise, then add to the spirit drawn over 1 oz. of the essence of lemons and 4 drops of the essence of ambergris. Re-distil, and keep the water in a bottle, well stopped for use.'

Royal Water

'Take of mace, 1 oz.; nutmegs, ½ oz.; bruise them and put them into an alembic with 6 quarts of proof spirit, and draw off 5 quarts with a gentle fire. Then take the spirit drawn off, and put into a glass alembic, with 2 dr. of essence of cedrat or bergamot, and draw off a gallon.'

Lavender-water

This, the most famous of all the perfumed waters, was originally a distillate from a mixture of spirit and lavender-flowers. This was the perfume. Then came a compound water, or 'Palsy Water,' which is now represented in tr. lavand. co., strictly for use as a medicine, but sometimes containing ambergris and musk as well as red sanderswood. This old compound, *minus* the colouring, seems to have been the progenitor of the perfume; at any rate, the nearer one can get in a formula and in practice to lavender and a fixer, such as musk, the better is the perfume. The most important precaution in making lavender-water is to use well-matured English oil of lavender. Some who take pride in this perfume use no oil less than five years old, which has had 1 oz. of rectified spirit added to each pound of oil before being set aside to mature. The perfume, after mixing, should stand for at least a month before filtering through English grey filtering-paper. This may be taken as a general instruction.

I

Ol. lavandulæ ang.	℥iss.
Ol. bergamot.	ʒiv.
Ess. ambergris	ʒiv.
Spt. rectificat.	Oiij.

M.

II

English oil of lavender	℥ss.
Oil of bergamot	ʒij.
Essence of ambergris	ʒj.
Essence of musk (No. 1)	ʒj.
Oil of angelica	♏ij.
Otto of rose	♏vj.
Spirit to	Oj.

Mix.

III

Mitcham oil of lavender	℥iv.
Grain musk	gr. xv.
Oil of bergamot	℥iiss.
Otto of rose	ʒiss.
Oil of neroli	ʒss.
Spirit of nitrous ether	℥iiss.
Triple rose-water	℥xij.
Spirit	Ov.

Allow to stand five weeks before filtering.

IV

Oil of lavender	℥j.
Tincture of Tonka bean	℥iiss.
Essence of ambergris	℥iiss.
Spirit of nitrous ether	℥v.
Melissa-water	℥xviij.
Spirit to	Ovss.

Mix.

V

Sugar of milk	ʒj.
Grain musk	gr. x.
Boiling water	℥ij.

Rub up the musk with the sugar for five minutes, then digest in the water for an hour, and when cold add to the following:—

Oil of lavender	℥iss.
Oil of cloves	ʒij.
Oil of bergamot	ʒvj.
Orris-root	℥iss.
Spirit	Oiij.

Macerate for a fortnight and filter.

VI

English oil of lavender	℥ss.
Foreign oil of lavender	℥ss.
Oil of bergamot	℥ss.
Oil of cloves	♏x.
Essence of musk	ʒij.
Oil of rosemary	ʒj.
Oil of petitgrain	ʒj.
Triple rose-water	℥ij.
Spirit to	Oiss.

Mix.

VII

Foreign oil of lavender	℥ss.
Oil of cloves	ʒiss.
Oil of bergamot	ʒiss.
Essence of ambergris	ʒiij.
Essence of musk	ʒiij.
Tincture of Tonka bean	℥j.
Tincture of orris	℥j.
Triple rose-water	℥v.
Spirit to	Oij,

Mix,

VIII

George IV. Lavender-water

Mitcham oil of lavender .	ʒvj.
Essence of musk . .	ʒvj.
Essence of millefleurs .	ʒvj.
Oil of bergamot . .	ʒiij.
Otto of rose . . .	ʒss.
Rectified spirit . .	℥xlviij.

Mix.

A delightful perfume, which was really prepared for and used by 'the First Gentleman in Europe.'

IX

Ol. lavand. ang. . .	ʒiv.
Ol. bergam. super. . .	ʒj.
Ol. cedrat. . . .	♏x.
Ol. rosmarin. ang. . .	♏x.
Ol. caryoph. ang. . .	♏x.
Mosch. gran. . . .	gr. ij.
Ol. rosæ virgin. . .	♏x.
Aq. aurant. conc. . .	℥j.
Aq. rosæ conc. . .	℥j.
Aq. destil. . . .	℥ij.
Spt. rect. ad . . .	℥xxv.

M.

X

Ol. lavand. ang. . .	ʒij.
Ol. lavand. exot. . .	ʒij.
Ess. moschi . . .	ʒj.
Ol. bergam. . . .	ʒss.
Ol. caryoph. . . .	♏xv.
Spt. æther. nit. . .	ʒij.
Spt. rect. . . .	℥xiv.
Aq. flor. aurant. . .	℥ij.

M.

XI

Ol. lavandulæ ang. . .	℥vj.
Essentiæ ambergris . .	℥iss.
Ol. bergamot. . .	℥iij.
Ol. rosæ virgin. . .	ʒij.
Moschi gran. opt. . .	gr. xx.
Aquæ destillatæ . .	℥xxiv.
Alum. ust. . . .	ʒiv.
Spt. rectificati . .	Oxij.

Macerate for a month.

XII

English oil of lavender .	℥j.
Oil of bergamot . .	ʒiss.
Essence of musk (No. 2) .	℥ss.
Essence of ambergris .	℥ss.
Spirit to	Oij.

XIII

Ol. lavandulæ ang. . .	℥iij.
Ol. bergamot. . .	ʒx.
Ol. rosæ virgin. . .	♏xij.
Ol. caryophylli . .	♏x.
Ol. neroli super. . .	♏xl.
Ess. ambergris . .	℥ss.
Ess. moschi . . .	ʒij.
Ol. limonis . . .	ʒss.
Spt. æther. nitrosi . .	℥ss.
Spt. rectificati . .	Ovj.

M.

XIV

Ol. neroli super. . .	♏xx.
Ol. lavand. ang. . .	℥ss.
Ol. lavand. exot. . .	℥iss.
Essent. moschi . .	ʒiss.
Essent. zibethi . .	ʒiss.
Aq. rosæ tripl. . .	℥iv.
Spt. rectificat. . .	℥xxxv.

Mix and set aside for several weeks, then filter through a double filter-paper.

XV

Ol. lavand. . . .	℥iv.
Ol. bergam. . . .	ʒvj.
Ol. limon. . . .	ʒij.
Ol. neroli . . .	ʒss.
Ol. caryoph. . . .	ʒss.
Moschi	gr. vj.
Aq. rosæ . . .	℥x.
Spt. rectif. . . .	Cong. j.

M.

XVI

Eau de Lavand Ambrée

Oil of lavender . .	℥ss.
Oil of neroli . . .	♏x.
Essence of ambergris .	ʒj.
Essence of musk . .	ʒj.
Rectified spirit to . .	℥xxx.

Mix.

The simplest lavender-waters are the best 'lavenders'—not necessarily, however, the best perfumes. Ambergris, or civet, or musk, is essential for bringing out the fine odour of lavender. Civet is specially serviceable in this respect. The foregoing are examples of the different kinds of formulas in use. Keep the water as long as possible before filtering, and filter through grey paper only which has been warmed in an oven.

Eau de Cologne vel Aqua Coloniensis

The Farinas of Cologne are more than outnumbered by recipes for the perfumes which they compound. Our difficulty is to make a choice out of the multitude, to avoid repetitions, to keep out the bad, or, rather, not to overlook the best. Let us begin well, however, with these two formulas which *The Chemist and Druggist* has immortalised :—

I

Sydney Gold Medal

Ol. bergamot. . .	♏xiv.
Ol. citron.[1] (*Citrus medica*) . . .	♏xxxv.
Ol. neroli petal. . .	♏xx.
Ol. neroli bigarad. . .	♏vij.
Ol rosmarini . . .	♏xiv.
pt. rectif. . . .	℥xiiss.

M.

II

Paris Exhibition Prize

Ol. bergamot. . .	ʒij.
Ol. limonis . . .	ʒj.
Ol. neroli . . .	gtt. xx.
Ol. origani . . .	gtt. vj.
Ol. rosmarini . . .	gtt. xx.
Spt. rectificat. . .	℥xx.
Aq. flor. aurant. . .	℥j.

Mix in this order.

These, it will be seen, differ very materially from each other; but each has its history, and both are honourable. The first was published many years ago in *The Chemist and Druggist.* A chemist in Australia made the product a stock rticle, pushed its sale, exhibited it at the Sydney Exhibition, nd for it he obtained a gold medal. The second was one of 19 sent in competition for a prize consisting of a free trip to he Paris Exhibition of 1889, which was offered by a well-known irm of distillers. An equally well-known firm of perfume-distillers adjudicated, and pronounced the product of the formula to closely resemble the genuine Farina. Neither of hese is specially remarkable when first prepared ; it is only by keeping six or eight months that their excellence becomes manifest.

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[1] This oil can only be obtained to order : sp. gr. 0·870.

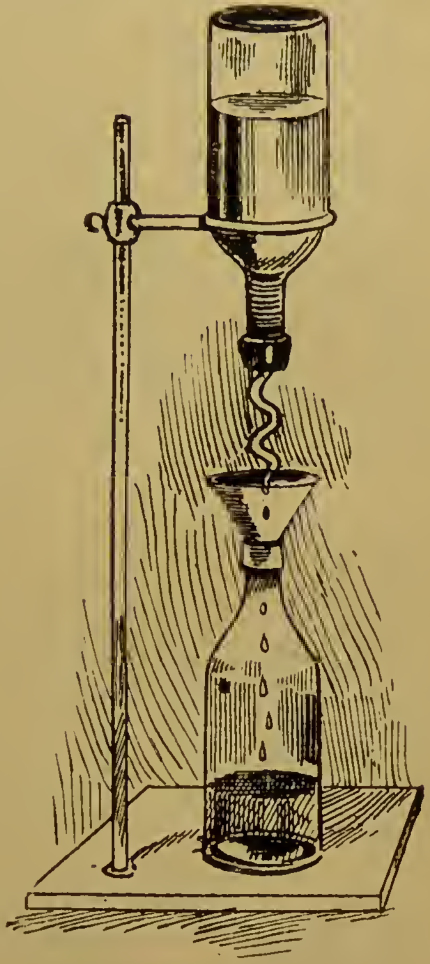
A very good authority states that Eau de Cologne to be of first quality must contain oil of lemon and grape-spirit. We know also that the Farinas distil the perfume and keep it for a year in bulk before it is bottled. The presence of neroli is essential, that being the characteristic odour of the water; indeed, the fact is noteworthy that most of the constituents are derived from the orange family. Rosemary is a necessary accompaniment; but all other odours, such as musk, civet, and cloves, which some are apt to load it with, are injurious to the refreshing character of Eau de Cologne. There is a belief, which we share, that none of the imitations of the genuine article approach it in delicacy. This is probably due to the fact that the imitations are generally more charged with essences than the original, and distilling has unquestionably a subtle influence upon the fragrance of the contained essences. What this influence may be can only be conjectured, but that some molecular reconstruction of the essential oils takes place on distilling and keeping seems to be most probable. It becomes important, therefore, that the retail manufacturer should hasten this change through some other influence than time, and there are two simple methods which may be adopted. One of these is explained in the following formula, which is at least a century old:—

III

Oil of neroli	♏x.
Oil of lemon	♏xl.
Oil of bergamot	♏ 50
Oil of cedrat	♏xv.
Oil of lavender	♏xviij.
Oil of rosemary	♏x.
Melissa-water	℥ivss.
Rectified spirit	℥xxx.

Put the oils and the spirit in a strong flask, giving the mixture a thorough shaking; then close the flask and keep the contents just warm (120° F.) for forty-eight hours, whereby perfect blending of the oils with the spirit is ensured. Then place it for twenty-four hours in a cool place, after which filter it through paper until it is obtained perfectly clear. With the filtrate mix the melissa-water.

Another very ingenious method for 'mellowing' is illustrated in the accompanying engraving. A glass tube about a foot long is twisted like a corkscrew, and the orifice narrowed to about $\frac{1}{16}$ inch: this is fitted by means of a cork into a bottle containing the fresh-mixed Eau de Cologne. The bottle is then inverted, and the contents allowed to trickle into the receiver. This has to be done in the direct rays of the sun before noonday, and the operation should be repeated five or six times. There is comparatively little loss by evaporation, and the perfume is distinctly improved. The solar rays play an important part in this change.



IV

Like 'Springbrunn' Brand

Ol. aurant. cort.	♏xxx.
Ol. limonis	♏xxx.
Ol. bergamot.	♏xij.
Ol. neroli bigarad.	♏j.
Ol. neroli petal.	♏ij.
Ol. rosmarini	♏iv.
Spt. rectificati	℥xvj.

M.

V

Like 'Jülichs-platz No. 4'

Ol. aurant. cort.	♏xxvj.
Ol. limonis	♏xxxiv.
Ol. bergamot.	♏xiv.
Ol. aurant. flor.	♏xiv.
Ol. rosmarini	♏xiv.
Spt. rectificati	℥xvj.

M.

While the use of grape-spirit is undoubtedly advantageous, 1 part of this to 3 parts of treble-distilled grain-spirit may be used, the product being superior to that in which grain-spirit alone is employed; but it should be noted that grape-spirit is an exceedingly rare commodity in the United Kingdom, just as it is on the Continent, where it is practically all absorbed in the manufacture of brandy. Doubtless traces of the higher alcohols and aldehydic bodies in this spirit, differing from those in grain-spirit, have something to do with the superiority of Farina 'Cologne,' and etherification between the oils and the spirit takes place during distillation and keeping, thereby producing the fine odour of old Eau de Cologne. The same thing must take place with grain-spirit under similar conditions, but these conditions seldom exist in pharmacy. What the drug trade generally supply of their own make is a mixed, not a distilled, Eau de Cologne, and for that the triple-distilled rectified spirit is the best. It is almost free from higher alcohols.

VI

Oil of bergamot . .	ʒiiss.
Oil of lemon . . .	ʒj.
Oil of Portugal . .	♏ 50
Oil of neroli . . .	♏xx.
Oil of petitgrain . .	♏x.
Oil of lavender (English) .	♏xx.
Oil of rosemary . .	♏x.
Oil of melissa . . .	♏v.
Spirit	℥xxx.
Rose-water . . .	ʒxiv.
Orange-flower water .	ʒxiv.

VII

Oil of bergamot . .	♏c.
Oil of lemon . . .	♏ 50
Oil of Portugal . .	ʒss.
Oil of petitgrain . .	♏x.
Oil of lavender . .	♏xx.
Oil of rosemary . .	♏xv.
Spirit	℥xxx.
Rose-water . . .	ʒix.
Orange-flower water .	ʒix.
Distilled water . .	ʒix.

The above formulas are for preparing the perfume by the cold method. The proper plan is to add the oils to the spirit in the order in which they are set down, shake well, and set aside for a few days, shaking occasionally before adding the waters. After these are added, set aside again for a week or two, and if not perfectly clear, filter.

VIII

Gegenüber dem Julichs-platz

We give this in the fashion that it comes to us :—

'Mix 350 grammes (11 oz.) of lemon oil, 270 grammes (8½ oz.) of bergamot oil, 20 grammes (5 dr.) of the finest French lavender oil, 12 grammes (3 dr.) of Mitcham peppermint oil, 120 drops of the best French oil of neroli, 100 drops of French oil of white thyme, 100 drops of the finest rosemary oil, 20 drops of otto of rose, 12 grammes (3 dr.) of acetic ether, 1,100 grammes (34 oz.) of distilled orange-flower water, and 200 grammes (6 oz.) of rose-water. After this mixture has stood for six months dilute it with 5 to 7½ kilos. (8 to 12 pints) of spirit, and distil.'

IX

Ol. bergamottæ . . .	ʒiiss.
Ol. portugal. . . .	ʒiiss.
Ol. limonis . . .	ʒss.
Ol. neroli . . .	ʒss.
Ol. rosmarini . . .	ʒss.
Spt. rectificat. . .	℥xxxij.

M.

X

Formula of 1801

Oil of bergamot .	ʒvj. ♏xv.
Oil of cedrat . .	ʒj.
Oil of lemon . .	ʒj.
Oil of lavender .	ʒss.
Oil of Portugal .	ʒj.
Oil of thyme . .	♏iv.
Oil of neroli . .	ʒj. ♏xv.
Oil of rosemary .	ʒj. ♏xv.
Spirit . . .	Oiij. ℥ij.

Mix and distil, then add to the distillate 2½ oz. of melissa-water and 5 oz. orange-flower water, and distil again.

XI

Ol. bergamottæ . .	℥iij.
Ol. limonis . . .	℥iij.
Ol. cedrat. . . .	℥iij.
Ol. lavandulæ . .	℥iss.
Ol. neroli . . .	℥iss.
Ol. rosmarini. . .	℥iss.
Ol. cinnamomi . .	℥ss.
Spt. rectificat.	Cong. ij. ℥xxxv.
Eau des carmes . .	℥xlviij.
Spt. rosmarini . .	℥xxxij.

Mix, allow to stand for eight days, and distil 365 oz. of the spirit.

No. XI. formula is that of the old French Codex, and a wonderful formula it is when we contrast it with No. IX., the recipe now officialised in France. There is no justification for cinnamon in Eau de Cologne. The following are French formulas which provide very good perfumes:—

XII

Ol. bergamot. . .	ʒij.
Ol. neroli . . .	ʒj.
Ol. limonis . . .	ʒj.
Ol. myrist. . . .	♏xj.
Ol. rosmarini . . .	♏vj.
Spt. rectificat. . .	℥xx.

M.

XIII

Ol. portugal. . . .	ʒss.
Ol. limon. . . .	ʒss.
Ol. bergamot. . .	♏xij.
Ol. neroli . . .	♏ij.
Ol. petitgrain . . .	♏iij.
Ol. rosmarini . . .	♏iv.
Spt. rectificat. . .	℥xvj.

M.

The German Apotheker-Verein has endeavoured to reduce to something like uniformity the many standards which are in vogue in the fatherland for this its most famous perfume, and we have the result in No. XIV. It has its peculiarities, and therein is its weakness. No. XV., also a German formula, provides a concentrated Eau de Cologne, which will bear dilution with ten times its volume of fine spirit. In this case dissolve the oils in the 10 oz. of spirit, and set aside for fourteen days, shaking four times a day. Then distil the mixture twice, when the result will be 10 oz. of an exceedingly strong perfume, which improves in odour the longer it is kept, and is specially suited for exportation. It is of good odour when freshly diluted with spirit, and the dilution further improves on keeping.

XIV

Ol. bergamottæ . . .	ʒv.
Ol. limonis . . .	ʒv.
Ess. moschi (1–50) . .	ʒj. ♏xv.
Ol. neroli . . .	ʒss.
Ol. cinnamomi . .	♏xv.
Ol. caryoph. . . .	♏xv.
Otto rosæ . . .	♏xv.
Spt. rectificat. . .	℥lvj.
Aquæ	℥iv.

Mix, allow to stand for eight days, shaking frequently; then filter.

XV

Ol. portugal. . . .	ʒiij.
Ol. bergamot. . .	ʒiij.
Ol. cedrat. . . .	ʒij.
Ol. lavandul. . . .	ʒij.
Ol. neroli . . .	ʒiij.
Ol. petitgrain . . .	ʒij.
Ol. rosmarin. . . .	℥ss.
Ol. limon. . . .	℥ss.
Spt. rectificat. . .	℥x.

Compound as directed above.

XVI

Ol. neroli . . .	♏ 50
Ol. rosmarin. . . .	♏xv.
Ol. bergamot. . .	♏lxxx.
Spt. rectificat. . .	℥xvj.
Aq.	℥v.

M.

XVII

Oil of bergamot .	ʒx. ♏xl.
Oil of neroli . .	♏lxxx.
Otto of rose . .	ʒj.
Musk . . .	gr. x.
Essence of vanilla .	ʒij.
Jasmine extrait .	ʒx. ♏xl.
Violet extrait . .	ʒx. ♏xl.
Spirit . . .	Ov. ℥xij.
Water . . .	℥x.

Mix the oils and extraits with 104 oz. of the spirit; digest the musk with the remaining 8 oz. at a gentle heat in a closed bottle for twenty-four hours; then add to the other liquid, add the water, cool, and filter. If convenient, set aside for some weeks before filtering.

No. XVI. is 'like the genuine,' says our note-book; and if there be any virtue in repetition, we have that simple formula in various degrees as to quantities, but all reputed to provide 'the same thing.'

XVIII

Ol. bergamot. . .	ʒiij.
Ol. citronel. . . .	ʒss.
Ol. rosmarin. . . .	ʒss.
Ol. neroli . . .	♏xviij.
Ess. mosch. . . .	ʒij.
Ol. lavand. ang. . .	♏xvj.
Ol. verben. . . .	♏xij.
Spt. rectificat. . .	℥xxviij.
Aq. destil. . . .	℥ij.

M.

XIX

Ol. lavand. . . .	℥ss.
Ol. limonis . . .	℥ss.
Ol. rosmarin. . . .	℥ss.
Ol. bergamot. . .	℥ij.
Ol. cedrat. . . .	℥j.
Ol. neroli . . .	ʒij.
Ol. caryoph. . . .	ʒj.
Aq. flor. aurant. . .	℥viij.
Spt. rectificat. ad . .	Cong. j.

M.

Reference has already been made to the great variety of German formulas. The subjoined table exhibits an instructive selection. The quantities are indicated in drachms, but 'dp.' stands for drops. Compare with these formulas No. VIII., which is reputed to give a product exactly resembling that of Farina.

—	Dieterich		Buchmeister		—	Askinson		Deite		Vomácka	
Spirit	8,250	8,250	900	875	900	2,000	915	8,250	8,100	8,000	8,000
Water	1,500	1,500	—	—	—	—	80	500	—	—	—
Oil of bergamot	100	100	9	25	8	25	5	85	150	12	14
Oil of lemon	50	50	12	15	8	25	10	75	135	30	33
Oil of rosemary	50	50	16 dp.	48 dp.	1	25	1	5	10	4	14
Oil of orange-flowers	30	10	1	1	2	30	—	—	40	3	14
Oil of neroli	10	10	—	40 dp.	—	—	—	—	—	—	—
Oil of ylang-ylang	2	1	—	—	—	—	—	—	—	—	—
Oil of lavender	—	10	1	4	—	—	1·2	10	10	—	—
Oil of wintergreen	—	1	—	—	—	—	—	—	—	—	—
Oil of peppermint	—	—	28 dp.	—	—	—	—	—	—	—	—
Oil of thyme	—	—	16 dp.	—	—	—	—	—	—	—	—
Oil of rose	—	—	4 dp.	—	—	—	—	—	—	—	—
Oil of melissa	—	—	trace	trace	—	—	—	—	5	—	—
Oil of orange-peel	—	—	—	—	—	—	—	40	—	30	26
Oil of petitgrain	—	—	—	—	—	—	—	15	—	—	—
Acetic ether	10	10	—	—	—	—	—	—	—	—	—
Acetic acid, 30 per cent.	10	10	—	—	—	—	—	—	—	—	—
Orange-flower water	—	—	80	80	—	—	—	500	800	—	—
Rose-water	—	—	—	—	—	—	—	500	800	—	—

XX

Ol. rosmar. ang.	♏xx.
Ol. bergamot.	ʒj.
Ol. limonis	ʒvj.
Ol. lavand. ang.	ʒij.
Ol. caryoph.	♏x.
Ol. neroli (Bigarade) pétale	♏xx.
Otto rosæ virgin.	♏xxiv.
Ol. cedrat.	ʒvj.
Spt. rectificat.	℥lxiv.

M.

Maiglöckchen

(For use in the following formula.)

Oil of linaloe	ʒiiss.
Oil of bergamot	ʒss.
Oil of rose-geranium	♏xlv.
Essence of musk	♏lxxv.
Jasmine extrait	℥xvj.
Rectified spirit	℥xlviij.

Mix.

Lily of the Valley Eau de Cologne

Oil of bergamot	ʒiv.
Oil of orange-flowers	♏xlv.
Oil of lemon	ʒiv.
Oil of lavender	♏xv.
Oil of rosemary	♏xv.
Oil of ylang-ylang	♏xv.
Oil of melissa	♏v.
Rose-water	℥iij.
Orange-flower water	℥iij.
Rectified spirit	Oij. ℥vj.
Maiglöckchen	℥vj.

Mix.

Eau Athenienne

Oil of rose-geranium	ʒj.
Oil of cloves	♏lxxv.
Oil of bergamot	ʒiiss.
Tincture of tonka bean	ʒv.
Essence of vanilla	℥ij.
Rectified spirit	℥xxiv.

Mix.

Eau de Bretfeld

Oil of neroli	gtt. xxx.
Otto of rose	gtt. xx.
Oil of lavender	ʒss.
Oil of cloves	ʒij.
Oil of bergamot	℥iiss.
Oil of lemon	ʒv.
Musk	gr. v.
Vanilla	℈iv.
Spirit	℥xxxij.

Macerate for a month and filter.

Eau de Portugal

Oil of lemon	ʒivss.
Oil of bergamot	ʒij.
Oil of sweet orange	ʒj.
Otto of rose	ʒss.
Spirit	Oij.

Dissolve.

Eau de Lisbonne

Oil of sweet orange	℥ss.
Oil of lemon	ʒij.
Otto of rose	♏xx.
Water	℥iij.
Spirit to	Oj.

Mix, and filter after ten days.

Eau de Leipsic

Oil of bergamot	ʒiij.
Oil of lemon	ʒj.
Oil of neroli	ʒj.
Oil of sweet orange	♏xxv.
Oil of rosemary	♏xxj.
Orange-flower water	℥vj.
Rectified spirit	℥xxiv.

Mix, and after a fortnight filter.

Florida-water.—This perfume holds the place in the United States that lavender-water holds in England. It is native of the soil, and has a distinctiveness all its own. It is not unlike a combination of lavender-water and Eau de Cologne, as the first formula especially shows. This is a formula which is used by a Californian house who have a large sale for the product. The other formulas provide pleasant variations.

I

Ol. lavand.	℥ss.
Ol. bergamot.	℥j.
Ol. cassiæ	ʒj.
Ol. caryophylli	ʒss.
Ol. neroli	ʒss.
Ess. moschi	℥ss.
Spt. rectificat.	℥lxiv.
Aq. cinnamom. ad	Oiv.

Mix in the above order.

II

Ol. bergamot.	℥j.
Ol. aurant. cort.	℥ss.
Ol. lavand.	ʒiij.
Ol. caryophylli	ʒiss.
Ol. cinnamomi	♏xv.
Tr. iridis rad.	℥j.
Ess. bals. peruv.	℥ss.
Spt. rectificat.	℥xxx.

M.

III

Ol. lavand.	ʒij.
Ol. limonis	ʒij.
Ol. bergamot.	ʒij.
Ol. neroli	ʒj.
Ol. melissæ	ʒss.
Ol. rosæ virg.	♏x.
Spt. rectificat.	℥xxxij.

M.

IV

Ol. bergamot.	ʒx.
Ol. limonis	ʒvj.
Ol. lavand.	℥j.
Ol. aurant. corticis	℥ss.
Ol. caryophylli	ʒj.
Ol. cinnamomi	ʒj.
Ol. neroli	ʒj.
Aq. rosæ	Oij.
Spt. rectificat.	Cong. j.

M.

Eau de Salvia

Oil of sage	ʒiiss.
Oil of lemon	ʒiss.
Rectified spirit	℥viij.
Distilled water to	Oij.

Dissolve the oils in the spirit, pour the solution into 32 oz. of water containing ½ oz. of French chalk, shake, and filter bright.

Melissa-water

(Spiritus Melissæ Co., Ph. Ger.)

Fol. melissæ	ʒxiv.
Cort. limonis	℥iss.
Sem. myristicæ	ʒvj.
Cort. cinnamomi	ʒiij.
Caryophylli	ʒiij.
Spt. rectificat.	℥xx.
Aq.	℥xxx.

Bruise the solids, mix with the liquids, and distil 25 oz.

Violet-water

I

Violet extrait	℥ij.
Cassie extrait	ʒvj.
Spirit of rose	ʒvj.
Spirit to	℥xvj.

Mix.

II

Violet extrait	℥ij.
Cassie extrait	℥j.
Spirit of rose	℥ss.
Tincture of orris	℥ss.
Green colouring	a sufficiency
Spirit to	Oj.

This perfume, which is of American origin, should have a pale greenish tint, but darker than violet extrait. Extract. cannabis indicæ makes a nice colour.

SACHETS AND SOLID PERFUMES

The popularity of sachets is comparatively modern, but the *pot-pourri* jar is very old. The form of the perfumes is similar, but their uses are quite different, and the composition also. What is popularly known as *pot-pourri* is a mixture of coarsely powdered aromatic drugs and resins and dried odorous leaves, especially rose-petals. The *pot-pourri* plays to the flowers the part which musk and civet play to volatile oils in liquid perfumes—it fixes and blends the perfume.

The sachet is a distinct thing. It is wanted for its individuality, to place in some handkerchief-box, drawer, or dress-cupboard, and it is essential that it must be elegant in material and get-up. Custom compels us to have it in fairly fine powder, the basis powdered orris by preference, although rice flour is, on the whole, as good and cheaper.

Solid perfumes are a more recent variety of sachet. They are composed of solid paraffin, wherewith the essential oils of any particular bouquet have been blended while liquid, in the proportion of ½ to 1 dr. of the perfume to 1 oz. of paraffin.

Solid Perfumes.—In making these melt the paraffin on a water-bath, and allow to cool without stirring and without removing from the water-bath; when the wax becomes creamy stir in the perfumes and pour the mass to the depth of ⅛ inch to ¼ inch in a tin previously brushed with suppository-mould soap solution. When the mass sets score the surface to the size of cakes desired. The following are formulas suited for putting up as specialities with fancy names:—

I

Paraffin	℥iv.
Oil of lavender . .	ʒij.
Oil of bergamot . .	ʒij.
Oil of cloves . . .	ʒj.
Oil of rose-geranium .	ʒss.
Vanillin	gr. viij.
Almond oil . . .	ʒj.

Triturate the vanillin with the almond oil, add the oils, and shake well before adding to the paraffin.

II

Paraffin	℥iv.
Oil of linaloe . . .	ʒij.
Heliotropin . . .	ʒss.
Oil of bergamot . .	ʒss.
Oil of lemon . . .	ʒss.
Almond oil . . .	ʒj.

Mix as above.

III

Paraffin	℥viij.
Oil of bergamot . .	ʒij.
Oil of neroli . . .	ʒj.
Oil of rose-geranium .	ʒj.
Oil of lavender . .	ʒj.
Oil of cloves . . .	♏vj.
Heliotropin . . .	gr. viij.
Almond oil . . .	ʒj.

Mix as above.

IV

Paraffin	℥iv.
Oil of ylang-ylang . .	ʒij.
Oil of cloves . . .	ʒj.
Oil of sandalwood . .	ʒss.
Coumarin . . .	℈j.
Essence of musk . .	ʒss.
Almond oil . . .	ʒj.

Mix as above.

An easier way for making solid perfumes was introduced in 1896—viz., the formation of medallions from a plaster-of-Paris basis. Thus, for the production of a Violette de Parme cake or medallion, mix ionone ʒj., oil of neroli ♏x., and otto of rose ♏vj. with 10 oz. of plaster of Paris and sufficient aniline violet to colour; add a drachm of common salt, and make into a cream with water. Cast into moulds quickly, and remove when set. The synthetic perfumes already described are particularly suitable for making these cakes. Use appropriate aniline dyes for colouring the mass: these may be dissolved in the water employed for making the plaster into a paste.

Another kind of solid perfume is made by massing any sachet powder with tragacanth mucilage and drying it at a heat not exceeding 80° F.

Peau d'Espagne, or Spanish Leather, is another perume of the solid type which is sometimes wanted, and is, ccording to Askinson, prepared as follows :—

Benzoin	℥viij.
Oil of bergamot	ʒvj.
Oil of lemon	ʒvj.
Oil of lemongrass	ʒvj.
Oil of lavender	ʒvj.
Oil of nutmeg	ʒiiss.
Oil of clove	ʒiiss.
Oil of neroli	℥iss.
Oil of rose	℥iss.
Oil of santal	℥iss.
Tincture of Tonka	ʒvj.
Oil of cinnamon	ʒiiss.
Rectified spirit	℥xxxij.

Make a tincture and filter. Take a square piece of chamois leather and leave it for three or four days in this tincture. At the end of the time emove the leather from the liquid, let it drain, spread it on a glass plate, and when dry coat it on the rough side, by means of a brush, with a paste prepared in a mortar from the following ingredients :—

Benzoic acid, sublimed	ʒiiss.
Musk	gr. xv.
Civet	gr. xv.
Gum acacia	℥j.
Glycerine	ʒvj.
Water	℥j. ʒvj.

The leather is then folded in the centre, smoothed with a paper-knife, put under a weight, and allowed to dry. The dried leather forms the so-alled perfume-skin, which retains its fine odour for years.

Instead of the above alcoholic liquids any desired alcoholic perfume may be used : especially suitable are those containing oils of lemongrass, lavender, and rose, since they are not very volatile, and when combined with musk and civet remain ragrant for a long time. A sufficiently large piece of perfume-kin, inserted in a desk-pad or placed among the paper, will make the latter very fragrant. Spanish skin is chiefly used for his purpose, as well as for work, glove, and handkerchief boxes, &c. It is generally enclosed in a heavy silk cover. Other perfumes may be employed similarly, but it will be seen from the composition of the above that the perfume is one of the most lasting.

Spanish Paste.—The second part of the preceding is a good working formula. The following is another :—

Powdered ambergris	ʒvj.
Powdered benzoin	℥iss.
Powdered musk	ʒvj.
Powdered vanilla	ʒvj.
Powdered orris-root	ʒvj.
Powdered cinnamon	ʒvj.
Oil of bergamot	℥iss.
Oil of rose (floral)	ʒvj.
Gum acacia	℥iss.
Glycerine	℥iss.

Mix the whole, and add water drop by drop until a doughy mass is obtained. This paste, divided into pieces about the size of a hazel-nut, is used for perfuming jewellery, scent-boxes, fine leather goods, belts, &c.

Sachet-powders.—The ingredients should be a mixture of coarse and fine powder. Mix all the solids together in a mill or mortar, sprinkle the liquids over the powder, and pass several times through a No. 6 sieve :—

Heliotrope

I

Orris-root, in coarse powder	℥vj.
Vanilla, in coarse powder	ʒij.
Musk	gr. iij.
Otto of rose	♏j.
Essential oil of almonds	♏j.

Mix.

II

Powdered orris-root	℥xvj.
Powdered vanilla	℥iv.
Powdered benzoin	℥j.
Musk	gr. v.
Civet	gr. xv.
Essential oil of almonds	♏x.
Otto of rose	♏x.

Mix.

III

Powdered orris-root	℥viij.
Coumarin	gr. xv.
Vanillin	gr. x.
Musk	gr. v.
Essential oil of almonds	♏j.
Otto of rose	♏j.
Spirit	ʒij.

Mix.

Ess. Bouquet

I

Powdered orris-root	℥xvj.
Grain musk	ʒj.
Otto of rose	ʒj.
Oil of bergamot	ʒiij.
Oil of lemon	♏xl.

Mix.

II

Powdered orris-root	lb. ij.
Powdered sandalwood	lb. ij.
Powdered orange - peel (sweet)	lb. ij.
Artificial musk	gr. j.
Coumarin	gr. ij.
Vanillin	gr. ij.
Otto of rose	ʒiss.
Oil of bergamot	ʒij.
Oil of ylang-ylang	♏xx.
Oil of neroli	♏xx.
Oil of rose-geranium	♏xv.
Oil of cinnamon	♏v.
Essential oil of almonds	♏v.
Jasmine extrait	℥ij.

Mix.

III

Powdered orris-root	lb. iv.
Ground cassie	lb. j.
Rose-petals	lb. j.
Ground vanilla	℥iij.
Oil of bergamot	ʒj.
Oil of lemon	ʒj.
Essence of musk	℥ij.
Essence of ambergris	℥ss.
Oil of rose-geranium	ʒj.

Mix.

Frangipanni

I

Powdered orris-root	℥xvj.
Powdered Tonka bean	℥iv.
Musk	gr. x.
Civet	ʒss.
Otto of rose	♏x.
Oil of sandalwood	♏x.
Oil of neroli	♏x.

Mix.

II

Powdered orris-root	℥xvj.
Powdered sweet-orange peel	℥xvj.
Powdered sassafras	℥iij.
Coumarin	gr. j.
Otto of rose	♏xx.
Oil of sandalwood	♏iij.
Oil of rose-geranium	♏iij.
Essential oil of almonds	♏ij.
Essence of musk	ʒiss.
Essence of civet	ʒiss.
asmine extrait	℥iss.

Mix.

III

Powdered orris-root	lb. iij.
Rasped sandalwood	℥iv.
Ground vanilla	℥iv.
Ground Tonka bean	℥ij.
Oil of neroli	ʒj.
Oil of rose-geranium	ʒj.
Oil of bergamot	ʒj.
Oil of sandalwood	♏xl.
Otto of rose	ʒss.
Oil of vetivert	♏x.
Essence of musk	℥j.
Essence of civet	ʒss.

Mix.

Acacia or Cassie

Cassie flowers Powdered orris-root	of each equal parts

Grind the flowers and mix with the orris.

Bouquet de Caroline

Powdered orris root	lb. ij.
Grain musk	gr. x.
Oil of bergamot	℥ss.
Oil of lemon	℥ss.
Otto of rose	ʒss.

Mix.

Chypre

Powdered orris-root	lb. iss.
Rasped cedarwood	lb. j.
Rasped sandalwood	lb. j.
Vanilla (ground)	℥iv.
Tonka bean (ground)	℥ij.
Essence of musk	℥j.
Oil of rose-geranium	ʒss.
Otto of rose	♏xxv.
Oil of bergamot	♏xv.

Mix.

Millefleurs

I

Powdered orris-root	℥xvj.
Grain musk	gr. v.
Civet	gr. x.
Otto of rose	♏xx.
Oil of neroli	♏xx.
Oil of cloves	ʒss.
Oil of bergamot	ʒj.

Mix.

II

Powdered orris-root	lb. ij.
Ground lavender-flowers	lb. j.
Ground cassie-flowers	lb. j.
Ground rose-flowers	lb. j.
Ground sandalwood	℥viij.
Ground Tonka beans	℥iv.
Ground benzoin	℥iv.
Ground vanilla	℥iij.
Ground cinnamon	℥ij.
Ground cloves	℥ij.
Essence of musk	℥ss.
Essence of civet	℥ss.
Oil of bergamot	℥ss.
Oil of rose-geranium	ʒss.
Oil of patchouli	♏x.

Mix.

Jockey Club

I

Powdered orris	℥xvj.
Musk	gr. v.
Otto of rose	♏xl.
Oil of bergamot	ʒj.
Oil of sandalwood	ʒj.

Mix.

II

Powdered orris-root	℥xij.
Ground sandalwood	℥ij.
Essence of musk	℥ss.
Oil of bergamot	ʒij.
Essence of civet	ʒij.
Otto of rose	♏viij.

Mix.

III

Sweet-orange peel, dried and ground	lb. iiss.
Powdered orris-root	lb. iss.
Ground rose-petals	lb. iss.
Siam benzoin	℥iv.
Ground sandalwood	℥ij.
Cloves	℥j.
Coumarin	gr. x.
Musk	gr. j.
Civet	gr. j.
Otto of rose	ʒj.
Oil of bergamot	ʒiss.
Oil of rose-geranium	ʒss.
Oil of neroli	ʒss.
Oil of cinnamon	♏x.
Oil of bitter almonds	♏x.
Oil of ylang-ylang	♏x.
Jasmine extrait	℥iv.

Mix.

Lign Aloe

Powdered orris-root	lb. iiiss.
Ground rose-leaves	lb. j.
Ground sandalwood	℥viij.
Ground vanilla	℥iv.
Oil of linaloe	℥j.
Essence of civet	℥j.
Essence of musk	℥ss.
Oil of rose-geranium	♏xl.
Otto of rose	♏xx.

Mix.

Lavender

I

Lavender-flowers	℥xvj.
Dried thyme	ʒj.
Dried spearmint	ʒj.
Powdered cloves	℥ss.
Powdered caraway	℥ss.
Oil of lavender	ʒij.

Mix.

II

Ground lavender-flowers	℥xvj.
Ground benzoin	℥j.
Oil of lavender	℥ss.
Essence of musk	℥ss.

Mix.

Maréchale

Powdered orris-root	lb. j.
Ground sandalwood	℥viij.
Ground rose-petals	℥iv.
Ground cloves	℥iv.
Essence of musk	℥j.
Oil of bergamot	ʒj.
Oil of rose-geranium	ʒj.
Oil of vetivert	ʒj.

Mix

Mousselaine

Powdered orris-root	lb. ij.
Ground rose-flowers	℥viij.
Ground cassie-flowers	℥viij.
Ground sandalwood	℥viij.
Ground benzoin	℥ij.
Essence of musk	℥ij.
Oil of vetivert	ʒj.
Oil of rose-geranium	♏xxxv.
Oil of neroli	♏v.

Mix.

Musk

I

Powdered orris-root	lb. iiss.
Grain musk	ʒss.
Otto of rose	ʒj.

Mix.

II

Rice-flour	℥xij.
Artificial musk	gr. x.

Stain the flour with a few drops of solution of aniline yellow and triturate the musk intimately with it.

New-mown Hay

I

ouquet de Caroline sachet	℥viij.
erbena sachet (No. 1)	℥iv.
iolet (No. 1)	℥iv.

Mix.

II

owdered orris-root	lb. ij.
round Tonka beans	℥iv.
round vanilla	℥ij.
ssence of musk	ʒvj.
il of rose-geranium	ʒj.
il of bergamot	ʒss.
tto of rose	♏xv.
il of almonds	♏v.

Mix.

Opoponax

owdered orris-root	lb. iij.
round rose-petals	lb. j.
round cassie-petals	lb. j.
round Tonka beans	℥iv.
round vanilla	℥iij.
round musk-pods (or essence of musk)	℥j.
ssence of civet	℥ss.
il of bergamot	ʒij.
il of rose-geranium	ʒj.
il of citron	ʒss.
il of patchouli	ʒss.
il of citronella	♏xv.
tto of rose	♏v.

Mix.

Patchouli

owdered orris-root	℥xvj.
owdered patchouli-leaves	℥viij.
tto of rose (or oil of rose-geranium)	ʒss.
il of patchouli	ʒj.

Mix.

Rose-geranium

owdered orris-root	lb. ij.
il of rose-geranium	℥ss.
tto of rose	♏x.
ssence of musk	ʒss.

Mix.

Rondeletia

Powdered orris-root	lb. iij.
Ground lavender-flowers	lb. iss.
Ground cloves	℥ss.
Essence of musk	℥j.
Essence of ambergris	℥j.
Oil of bergamot	ʒij.
Oil of English lavender	ʒij.
Oil of cloves	ʒij.
Oil of rose-geranium	ʒss.
Otto of rose	♏xx.

Mix.

Rose

I

Ground rose-petals	lb. iss.
Powdered orris-root	℥viij.
Ground sandalwood	℥iv.
Ground patchouli-leaves	℥ij.
Essence of civet	℥ss.
Oil of rose-geranium	ʒss.
Otto of rose	♏xx.

Mix.

II

Sem. coriand.	℥viij.
Pulv. pimentæ	℥iv.
Pulv. caryoph.	℥iv.
Pulv. benzoin.	℥iv.
Pulv. iridis	℥iv.
Moschi	gr. ij.
Sacch. demerar.	℥viij.
Storacis	ʒij.
Ol. bergam.	ʒvj.

M.

White Rose

Powdered orris-root	℥xvj.
Rice-flour	℥viij.
Otto of rose	ʒij.
Oil of patchouli	♏xv.

Mix.

Red Rose

Powdered orris-root	℥xvj.
Rasped sandalwood	℥viij.
Rasped cedarwood	℥viij.
Musk	gr. v.
Otto of rose	ʒj.

Colour the orris-powder with solution of carmine before mixing with the other ingredients.

Sweet Briar

Powdered orris-root	lb. iv.
Ground sandalwood	lb. j.
Essence of ambergris	℥j.
Essence of musk	℥ss.
Oil of lemon	ʒj.
Oil of lemongrass	ʒj.
Oil of neroli	ʒj.
Oil of bergamot	♏xl.
Oil of rose-geranium	ʒss.
Otto of rose	ʒss.

Mix.

Verbena

I

Powdered orris-root	lb. ij.
Civet	gr. x.
Oil of lemongrass	ʒj.
Otto of rose	♏xx.

Mix.

II

Powdered orris-root	lb. iij.
Essence of musk	℥ss.
Oil of lemongrass	ʒiij.
Oil of bergamot	ʒij.
Oil of rose-geranium	ʒss.

Mix.

Violet

I

Powdered orris-root	lb. ij.
Powdered benzoin	℥iv.
Cassie extrait	℥j.
Otto of rose	♏x.
Essential oil of almonds	♏x.

Mix.

II

Powdered orris-root	lb. iij.
Essence of musk	℥j.
Oil of bergamot	ʒss.
Essential oil of almonds	♏xx.
Otto of rose	♏xx.

Mix.

Violette de Parme

Ionone	ʒij.
Jasmine extrait	ʒiij.
Orris-powder	℥iv.
Rice-flour	℥xij.

Mix and tint with violet aniline.

West-end

Powdered orris-root	lb. j.
Grain-musk	gr. x.
Civet	gr. xx.
Otto of rose	♏xx.
Oil of bergamot	♏xl.

Mix.

Ylang-ylang

I

Powdered orris	lb. j.
Powdered benzoin	℥ss.
Civet	gr. v.
Oil of ylang-ylang	♏xx.
Oil of bitter almonds	♏iij.

Mix.

II

Powdered orris-root	lb. iij.
Ground cassie-flowers	lb. j.
Rose-flowers	lb. j.
Ground pimento	℥iv.
Ground Tonka bean	℥ij.
Ground vanilla	℥ij.
Ground benzoin	℥j.
Essence of musk	℥j.
Essence of civet	℥ss.
Oil of bergamot	ʒij.
Oil of ylang-ylang	ʒij.
Oil of pimento	ʒj.
Oil of rose-geranium	ʒj.
Otto of rose	♏xx.

Mix.

A simple way to make sachets extemporaneously is to take a sufficient quantity of a basis and add to it liquid perfume in the proportion of a drachm to the ounce. The resulting compound is suited for ordinary retail sale, and if a more permanent article is desired, the ingredients of any perfume *minus* spirit may also be mixed with the basis. The following are suitable bases :—

I

Bran	℥vij.
Powdered orris-root	℥j.

Mix.

II

Ground rice	℥iv.
Powdered orris-root	℥iv.–℥xij.

Mix.

The latter may be coloured with a few drops of a proof-spirit solution of an aniline dye.

In compounding sachets the whole of the liquid ingredients should be mixed and triturated for five minutes with twelve times their bulk of orris-root or other non-resinous basis. The resins, if any are in the formula, should be separately mixed with a portion of the fibrous basis.

Pot-pourri.—In making pot-pourri the whole of the solids are to be coarsely powdered, the liquids evenly sprinkled over the mixture, and then all well shaken together.

I

Orris-root	℥xvj.
Benzoin	ʒv.
Coriander	℥iv.
Cinnamon	℥j.
Cloves	℥j.
Pimento	℥j.
Tonquin bean	℥ss.
Ess. bouquet	℥ss.

II

Lavender-flowers	lb. j.
Rose-petals	lb. j.
Orris-root	lb. j.
Table-salt	℥viij.
Cloves	℥iv.
Cinnamon	℥iv.
Benzoin	℥iv.
Pimento	℥iv.
Vanilla	℥iij.
Musk-pod	ʒj.
English oil of lavender	ʒj.
Oil of sandalwood	ʒj.
Oil of rose-geranium	ʒj.
Oil of bergamot	ʒij.
Oil of lemon	ʒij.
Essence of ambergris	℥ss.
Otto of rose	♏x.

Grind all the solids to coarse powder, and with the mixture intimately incorporate the oils.

III

Rose-petals	℥viij.
Lavender-flowers	℥iv.
Orris-root	℥ij.
Vanilla	ʒij.
Cloves	ʒij.
Storax	℥ss.
Siam benzoin	℥j.
Ambergris	gr. xx.
Musk	gr. iv.
Common salt	℥ij.
Oil of lemon	ʒj.
Oil of vetivert	ʒss.

IV

Vanilla	℥j.
Orris-root	℥j.
Cloves	℥j.
Cinnamon-bark	℥j.
Oil of lavender	♏x.
Oil of neroli	♏x.

V

Coriander	℥iv.
Orris-root	℥iv.
Calamus	℥iv.
Rose-petals	℥iv.
Lavender-flowers	℥ij.
Mace	℥ss.
Cinnamon	℥ss.
Cloves	ʒij.
Essence of musk	ʒss.
Common salt	℥ij.

For mixing at home the plan to adopt is as follows:—Take a 2-gallon jar and fill it with rose-petals, orange-blossoms, and lavender-flowers, sprinkle them well with salt, and then disperse through the contents 4 oz. of any pot-pourri which does not contain the dried flowers. If lavender and orange flowers are not obtainable, the powder should contain oils of neroli and lavender. Generally speaking, rose-leaves only are preserved in England.

VI

Sem. coriand.	℥xvj.
Pulv. benzoin.	℥viij.
Pulv. iridis	℥viij.
Pulv. pimentæ	℥ij.
Pulv. cinnam.	℥j.
Pulv. caryoph.	℥ss.
Ol. bergam.	ʒij.
Ol. lavand.	ʒij.
Moschi	gr. ij.
Ess. bouquet.	℥ij.

M.

VII

Pimento	℥ij.
Cinnamon	ʒij.
Essence of musk	♏xij.
Essence of ambergris	♏xij.
Oil of lavender	♏xij.

Mix.

VIII

Vanilla	℥j.
Orris-root	℥j.
Cloves	℥j.
Cinnamon	℥j.

Mix.

IX

(Lord Plymouth's Pot-pourri)

Benzoin. siamensis contus.	℥viij.
Pulv. iridis	℥viij.
Pulv. storacis	℥viij.
Pulv. rad. angelicæ	℥viij.
Gran. moschi	℈j.
Fabæ tonkæ	No. iv.
Macidis	℥ss.
Caryophyll.	℥ss.
Cort. cinnam. contus.	℥ss.

Mix all these when they have been bruised or powdered and add

Ol. lavand. ang.	ʒj.
Otto rosæ	ʒj.
Flor. rosæ	℥iv.
Flor. lavandulæ	℥iv.

Again mix.

X

(Violet Odour)

Black-currant leaves	℥vij.
Cinnamon	℥viij.
Rose-leaves	℥viij.
Powdered orris-root	℥xviij.
Powdered benzoin	℥iv.
Essential oil of almonds	ʒiij.
Grain musk	ʒj.

Mix.

XI

Gum benzoin	℥ij.
Orris-root	℥j.
Cloves	℥j.
Storax	℥ss.
Cinnamon	ʒij.

Grind together and add

Musk	ʒss.
Coarse and dry salt	lb. ij.
Oil of lavender	♏xx.

Mix.

XII

Cinnamon	℥ss.
Cloves	℥ss.
Mace	℥ss.
Orris-root	℥iv.
Oil of lavender	♏xl.
Oil of lemongrass	♏xl.
Oil of lemon	♏xl.
Oil of bergamot	♏xl.

Mix.

FUMIGATING-PERFUMES

These are used for quickly putting down bad odours in sick-rooms and other apartments. As a rule, they are not very nice, being rather balsamic than flowery; still, they are decidedly antiseptic, and fulfil their purpose admirably.

Incense-powders

I

Gum thus	℥iij.
Benzoin	℥iij.
Amber	℥iij.
Lavender-flowers	℥j.

Powder the resins coarsely and mix with the flowers.

II

Benzoin	ʒvj.
Gum thus	℥vj.
Storax	℥viij.
Olibanum	℥iv.
Cascarilla	℥xij.
Musk	℈j.

Mix as above.

Piesse

Sandalwood in powder	lb. j.
Cascarilla, in powder	℥viij.
Benzoin, in powder	℥viij.
Vetivert	℥ij.
Nitrate of potash	℥ij.
Grain musk	ʒss.

Mix thoroughly and sift.

Note.—The best way to use these incense-powders is to sprinkle a little upon a hot shovel, or, better, upon a live coal placed on a shovel and held in mid-air. Nos. I. and II. may have a twelfth of their weight of nitre added to them as in Piesse's formula.

Ecclesiastical Incense is best represented by No. II. without musk. The finest Siam benzoin should be used. The formula for incense used in the Jewish Church in the time of Moses is thus given in Exodus xxx. 34–36:—

> Take unto thee sweet spices, stacte, and onycha, and galbanum, *these* sweet spices, with pure frankincense: of each shall there be a like *weight*:
>
> And thou shalt make it a perfume, a confection after the art of the apothecary, tempered together, pure *and* holy:
>
> And thou shalt beat *some* of it very small, and put of it before the testimony in the tabernacle of the congregation.

All these constituents except onycha are known; but there is considerable doubt about what onycha is. A lengthy correspondence in *The Chemist and Druggist*, August 26, 1899, *et seq.*, showed that in the Hebrew it seems almost conclusive that onycha denotes the crustaceous covering of the shells of certain species of a univalve shellfish found in the Red Sea and Indian Sea; but there are several reasons for supposing that good almondy benzoin was the more likely constituent. Mr. E. M. Holmes mentions that a Jewish recipe for the incense used before the destruction of the Temple (incense being not now used by the Jews) included, as chief ingredients, balm, onycha, galbanum, frankincense, and, in lesser quantities, myrrh, cassia, spikenard, saffron, costus, canella, cinnamon, soap of Carsina, and 'a herb fitted to raise a fume.' The onycha was to be refined by means of the soap of Carsina, and rendered more powerful by digestion in wine of Cyprus. It is, therefore, quite apparent that the exact composition of the Levitical incense is beyond our ken, but the first four ingredients of No. II. formula make a good compound.

Paper.—Select good white blotting-paper, or other unsized paper, and cut each demy sheet lengthways into three equal pieces. Make a solution of 1 oz. of potassium nitrate in 12 oz. of boiling water; place this solution in a large plate, and draw each strip of paper over the solution, so as to saturate it. Then dry by hanging up. The dried paper is to be saturated in a similar manner, or by spraying, with either of the following solutions :—

I

Siam benzoin	℥j.
Storax	ʒiij.
Olibanum	℈ij.
Mastic	℈ij.
Cascarilla	ʒij.
Vanilla	ʒj.
Rectified spirit	℥viij.

Bruise the solids and macerate in the spirit five days, filter, and add

Oil of cinnamon	♏viij.
Oil of cloves	♏viij.
Oil of bergamot	♏v.
Oil of neroli	♏v.

Mix.

II

Benzoin	℥iss.
Sandalwood	℥j.
Spirit	℥viij.

Macerate as No. I and add

Essence of vetivert	ʒiij.
Oil of lemongrass	♏xl.

Mix.

After the paper is dry, cut it into suitable-sized pieces to go into a commercial envelope—ten pieces for 6*d*.

As 'Armenian paper' it is sold in yellowish-brown strips about ½ inch wide, made from white demy, the solution being coloured with tr. benzoin. co.

Ribbon.—Take ½-inch cotton tape and saturate it with nitre in the same manner as the paper above described; when dry saturate with the following tincture :—

Benzoin	℥j.
Orris-root	℥j.
Myrrh	ʒij.
Tolu balsam	ʒij.
Musk	gr. x.
Rectified spirit	℥x.

Macerate for a week, filter, and add 10 minims of otto of rose.

Another good formula, which may also be used for preparing fumigating-paper, is

Olibanum	℥ij.
Storax	℥j.
Benzoin	ʒvj.
Peruvian balsam	℥ss.
Tolu balsam	ʒiij.
Rectified spirit	℥x.

Macerate ten days and filter.

Pastilles.—The following are good formulas; the first is said to give a product closely resembling Piesse & Lubin's pastilles; the second is from the French Codex; and the third is one highly spoken of by a competent pharmacist:—

I

Cascarilla	℥j.
Benzoin	℥j.
Camphor	ʒj.
Nitre	ʒj.
Charcoal	℥ij.
Ambergris	gr. x.
Musk	gr. x.
Mucilage of tragacanth	a sufficiency

Powder the ingredients, mix, and make into a stiff paste with the mucilage. Divide into cones and dry.

II

Vegetable charcoal	℥vj.
Benzoin	℥j.
Nitrate of potash	℥ss.
Tolu balsam	ʒij.
Sandalwood	ʒij.
Mucilage of tragacanth	a sufficiency

Reduce the solids to fine powder, mix, and make into a stiff paste with the mucilage. Divide this into cones 25 gr. in weight and dry at a gentle heat.

III

Powdered willow-charcoal	℥viij.
Benzoic acid	℥vj.
Nitrate of potash	ʒvj.
Oil of thyme	ʒss.
Oil of sandalwood	ʒss.
Oil of caraway	ʒss.
Oil of cloves	ʒss.
Oil of lavender	ʒss.
Oil of rose	ʒss.
Rose-water	℥x.

Proceed as in No. I., but this recipe is much the better for the addition of 20 gr. of powdered tragacanth.

Nos. II. and III. pastilles are good for burning in apartments to keep away insects.

PERFUMING HALLS AND THEATRES

When the play of 'Sweet Lavender' was in vogue provincial chemists were occasionally called upon to perfume the theatres with lavender-water. It was a herculean task to undertake, and there were not many who knew exactly how to go about it. The fashion has almost died out now, but it may revive any day; and, as ballrooms and other large apartments are perfumed in the same manner, the *modus operandi* finds a place here.

For the 'Sweet Lavender' business such a perfume as the following may be used, it being cheaper and more penetrating than the delicate 'triple-distilled old English' stuff, which has not sentiment to back it up, as a theatre-perfume may be said to have :—

Ol. lavand. exot.	℥iv.
Ol. bergamot.	℥ij.
Ol. menth. pip.	♏x.
Ol. caryoph.	ʒj.
Acid. benzoic.	ʒj.
Spt. rectificat. ad	Oj.

'This is enough for a good-sized theatre,' wrote a *Chemist and Druggist* subscriber, who had had much experience in the matter. With this and an ordinary sixpenny atomiser go to the theatre half an hour or so before the doors open. Sprinkle about an ounce or so at each inner entrance, and spray some on the seats of the pit, stalls, dress-circle, and boxes. Do not forget the bars, where, of course, the barmaids should have a supply of the favourite brand of lavender (or whatever the perfume may be) on sale. Between the acts it is advisable to go about the theatre spraying the perfume with a double-bulb spray-producer, and if there is a prominent advertisement on the programme the sales of the perfume will 'boom.'

Other plans are to mix the perfume with a large quantity of milk and sprinkle or wash over the floor ; or to combine it with French chalk and sprinkle over the dancing area. The former suggestion is not nice, but the latter has been acted upon by makers of Ballroom-floor Polish (a mixture of powdered boric acid 6 parts with hard paraffin 1 part), who add lavender oil or similar perfume to the powder in the course of manufacture.

TO PERFUME PROGRAMMES

Sprinkle some of the perfume on a half-demy sheet of blotting-paper, allow excess of spirit to volatilise, and place at the bottom of an air-tight box of suitable size. On the paper place a layer of programmes, then another sheet of perfumed paper, more programmes, and so on. Close the box when full, and keep in a warm place, repeating the process if necessary.

Another plan is to mix the perfume with ground rice and sprinkle it over the cards, put in a box layer by layer. In a short time the cards may be removed and dusted.

BEVERAGES

The scope of this chapter is wide, but—short of the production of distilled alcoholic liquors, such as whisky, and excisable brewed beers, such as 'Burton'—it refers to all manner of forms in which chemicals, drugs, and essential oils are compounded in order to provide drinks for man. This has been during the past few decades an important branch of pharmacy, and the development of it has in several instances been so specialised that the exponents have abandoned pharmacy to devote themselves solely to providing beverage-makers with the materials which they require.

In this chapter we first deal with such things as effervescing powders and syrups which may be compounded in the pharmacy without extra outlay in plant, &c.; second, we take up aërated beverages and everything pertaining thereto, such as soluble essences, colourings, and so forth; then we have a third group, beginning with brewed beers and advancing through cordials to sweets and wines, this group taking us, therefore, into certain fiscal considerations which must be observed by those engaged in the manufacture of such liquors.

EFFERVESCING POWDERS

The ingredients used in compounding effervescing powders (as distinguished from granular effervescing salts, which, being medicinal, are not included in this chapter) are powdered tartaric acid, bicarbonate of soda, and powdered or icing sugar, with certain colouring and flavouring matters which give the respective powders their names. Citric acid is not so suitable for these powders as tartaric acid, because it is inclined to deliquesce, and consequently to cake the powder. In point of fact, tartaric acid cannot be improved upon, but there is a demand by some people for something cheaper, and such things are provided in Tartaraline (acid sulphate of potash) and Citrolene, which are of the same saturating power as tartaric acid, give an equal evolution of carbonic acid, a clear solution, and neutral salts, which are not more active physiologically than sodium tartrate (which is the salt formed when tartaric acid and bicarbonate of soda are brought together). The substitution of the cheaper for the dearer acid material can, however, be of moment to the few; and we need scarcely add that we have a strong preference for tartaric acid, as experience shows it to be eminently satisfactory. The acid is used in slight excess in order to give the drinks a pleasant tartness. The following is the reaction which takes place :—

$$\underset{(150)}{H_2C_4H_4O_6} + \underset{(168)}{2NaHCO_3} = Na_2C_4H_4O_6 + 2CO_2 + 2H_2O$$

It appears from this equation that, allowing for water and other slight impurity in the respective substances, equal parts of them when brought together in presence of water afford a solution in which there is decided excess of tartaric acid. The solution is perfectly clear, which it would not be if cream of tartar were used, because the latter generally contains a very small amount of insoluble matter; nor if bicarbonate of potash ($KHCO_3 = 100$) were used in place of the soda salt, for then some cream of tartar would be formed and precipitated.

Lemon Kali deserves the first place amongst effervescing powders, for although not of great antiquity the enormous quantities of it consumed under this and other names give it preference. It appears that the powder was originated by Charles Gomond Cooke, one of the founders of Godfrey & Cooke, as 'Lemon and Kali,' Mr. Cooke at the same time designing for it the bottles known as *Kalies*. Since then it has passed through many phases before reaching farthing packets to be retailed by confectioners. Some pharmacists still keep up the old name 'Lemon and Kali.' Why 'Kali,' since that is the modern Teutonic name for potash? Dr. John Attfield explains that in its earliest or Arabic sense the word signified ashes, and until Leblanc's invention of a process for making soda from salt that alkali was also made from ashes—viz., those of seaweed.

In compounding lemon kali, the ingredients should be well dried before they are mixed, and the mixing should be done in a mortar. The best plan is to mix the tartaric acid and bicarbonate in the mortar first, then place on paper. Now put a few ounces of the sugar in the mortar, over this sprinkle the oil of lemon, and stir well; add more sugar, and so on until it is thoroughly blended; then mix in the soda and acid, and sift several times. If made by the hundredweight the oil of lemon must still be rubbed up with a sufficiency of sugar to thoroughly divide it without leaving the sugar lumpy, then this powder may be added to the others, and the whole passed several times through a Gardner's mixer and sifter. The following are typical formulas, the second being intended for cheap trade:—

I	
Pulv. sacch. alb. . .	lb. iv.
Pulv. acid. tart. . .	lb. ij.
Pulv. sodæ bicarb. . .	lb. ij.
Ol. limonis . . .	ʒij.
M.	

II	
Pulv. sacch. alb. . .	lb. vij.
Pulv. sodæ bicarb. . .	lb. ij.
Pulv. acid. tart. . .	℥xxx.
Pulv. potass. tart. acid. .	℥iv.
Ol. limonis . . .	ʒv.
M.	

Citrated Kali is the name by which lemon kali goes in the United States, and it also has a variety of names in Britain, Persian Sherbet being perhaps the commonest; but there are many kinds of sherbet which do not differ materially from the foregoing except in respect to flavour and colour. Even more care is required in adding colouring than in mixing flavours, for if the colour be imperfectly mixed the powder has a spotted appearance. The best colourings, on the whole, are aniline dyes—yellow, orange, magenta, and so on. A little of them goes a long way: they are harmless and give nice tints, which is the chief consideration in cheap sherbets. The dye, in the proportion of about 1 gr. to 1 lb. of sherbet, is dissolved in 30 or 40 minims of proof spirit, and mixed with the sugar in the manner already explained, the sugar being afterwards dried gently in a warm room before the flavouring is added. It should be noted that the sherbets sold by confectioners contain a small proportion of soda and acid, their combined weight being as 1 to 6 or 8 parts of sugar, which is sufficient for powders taken dry on the tongue, and on the whole safer for children, upon whom ½ oz. of good lemon kali would act as a laxative. The subjoined proportions of colourings and flavourings are for 1 lb. of sherbet :—

Ambrosia

Safranine	gr. ss.
Essence of vanilla	♏x.
Oil of bergamot	♏vj.

Apricot Nectar

Solution of carmine	♏x.
Essence of apricot	ʒss.

Cherry

Solution of carmine	ʒss.
Essence of cherry	ʒss.

Gooseberry Pop

Essence of gooseberry	ʒj.
Chlorophyll	gr. ij.

Noyeau

Solution of carmine	♏v.
Essence of bitter almonds	♏xx.
Essence of vanilla	♏v.

Orgeat

Essence of peach	ʒss.

Pineapple

Azo-orange	gr. ss.
Essence of pineapple	ʒss.

Raspberryade

Solution of carmine	ʒss.
Tincture of orris	ʒij.

Strawberry

Solution of carmine	♏xx.
Essence of strawberry	ʒiss.

The addition of 1 oz. of powdered gum arabic to every 2 lbs. of lemon kali (without flavour) makes plain Cream Soda, and the same may be added to any other powders to give body and abundant froth.

Non-effervescing Lemonade Powder for producing home-made lemonade extemporaneously is now a popular article. The formula for it is :—

Acid. tartaric.	℥j.
Ol. limonis	♏xx.
Tr. curcumi	ʒj.
Pulv. sacch. alb.	lb. j.

Mix the tincture and oil with a few ounces of the sugar, then add to the bulk and sift.

This is put up in 1-oz. packets to retail at a penny, the directions being :—'Empty the contents of the packet into a pint of cold water and stir, when a pint of delicious lemonade will be produced.' Other flavours may be employed in the same manner ; for example, those given above.

Fruit Crystals, although intended for a similar purpose to the foregoing, are made without sugar. The basis is citric acid coarsely powdered. To this is added:—For (1) Ginger: gingerin ʒss., spirit colouring ʒj.; for (2) Lemon: ol. limonis ʒj., crocein B gr. ij., s.v.t. ʒj.; for (3) Raspberry: fuchsine gr. ij., essence of raspberry ℥ss.; for (4) Orange: oil of sweet orange ʒss., azo-orange gr. ij., proof spirit ʒj. These quantities are sufficient for 10 oz. of citric acid. The colour and flavour should in each case be mixed together before adding to the citric acid, which is then to be powdered. Many other flavours than the above can be produced. An ounce of the fruit crystals and 1 lb. of sugar form with a pint of boiling water the fruit syrup, which with cold water *quant. suf.* makes a refreshing summer drink. If tartaric acid is used instead of citric acid the resulting crystals may be done up in packets with a paraffin-paper wrapping. Tartaric acid destroys yellow and orange dyes.

Effervescing Tablets are best made by compression, using such powders as lemon kali, &c., which have not been dried before mixing, or if so they should be damped with 2 dr. of proof spirit to each pound of powder. These make the familiar thirst-quenchers. A similar article, intended for putting into a tumblerful of water, is made by mixing 8 oz. of icing sugar with 1 oz. each of sodium bicarbonate and tartaric acid and 10 drops of oil of lemon; make this powder into a paste with a sufficiency of rectified spirit, roll out the mass to the thickness of ¼ inch upon paraffin-paper, divide into squares, and dry at a gentle heat. Other flavours than lemon may be used. Effervescent Pastilles are also made with acid and alkali separate, but they are not popular, and the method suggested for making them is objectionable. This is shown by the following directions for Raspberry Pastilles:—

I	
Bicarbonate of soda	℈ij.
Powdered sugar	℈j.
Raspberry essence	gtt. j.
Solution of carmine	q.s.
Mucilage of acacia	q.s.

To make a pastille.

II	
Tartaric acid	ʒss.
Powdered sugar	ʒss.
Mucilage of acacia	q.s.

To make a pastille.

To produce an effervescing drink one of the alkaline pastilles is dissolved in a quarter of tumblerful of water, then an acid one; but the method is clumsy, and the pastilles made with acacia mucilage become like bricks on keeping. Mucilage of tragacanth is better.

Ginger-beer Powder.—The effervescing powder is made by adding to lemon kali (containing half the usual amount of lemon) gingerin ♏v. dissolved in tincture of quillaia ʒss., this being sufficient for 1 lb. of kali. 'Ginger-beer powder' is, strictly speaking, what is used to add to sugar and water for making fermented ginger-beer. We discuss the manufacture of the beer later. The ingredients of the powder vary somewhat, but the following are typical:—

I

Bruised ginger	℥j.
Cream of tartar	℥iss.
Oil of lemon	♏vj.

Mix.

To make 2 or 3 gals. of beer.

II

Bruised ginger	℥j.
Cream of tartar	℥iss.
Oil of lemon	♏vj.
Powdered sugar	℥j.

Mix.

Sufficient for 2 or 3 gals.

III

Bruised African ginger	℥ 50
Cream of tartar	℥xxx.
Powdered sugar	℥ix.
Oil of lemon	℥j.
Powdered alum	℥v.

Mix. Put up in 2-oz. packets.

IV

Cream of tartar	℥j.
Rice-flour	℥ss.
Sugar	℥ss.
Gingerin	♏xx.
Oil of lemon	♏iv.

Triturate the gingerin and oil with the rice-flour for two minutes, then add the sugar, and lastly the cream of tartar.

For 2 or 3 gals.

NOTE.—The addition of rice-flour to ginger-beer powder does something more than make bulk, because it helps to feed the yeast-plant, and so provide a much brisker brew. Some of the best powders in the market contain rice-flour or farina, and, as far as we can judge, their superiority is due solely to this addition.

The last of these powders does not require the preliminary infusion necessary in the other cases; with this exception the following general directions apply to the whole:—

Pour 1 gal. of boiling water over the contents of the packet, let it stand for an hour, then add 1 lb. of sugar, 1 gal. of cold water, and two tablespoonfuls of brewer's barm or ½ oz. of German yeast spread on a piece of toast floating on the brew. Allow it to 'work' for three or four hours, then strain through flannel, and bottle.

A common label is the following :—

GINGER-BEER POWDER

FOR MAKING

AN EXCELLENT, CHEAP, AND WHOLESOME BEVERAGE

Directions for Use.—Dissolve 2 lbs. of moist or lump sugar with one of the Powders in 1 gal. of boiling water, then add 2 gals. of cold water, and when sufficiently cold ferment with yeast. No straining required.

N.B.—The white of one or two eggs well mixed with the yeast before adding will greatly facilitate the fermentation.

Effervescing Salines.—In compounding these the ingredients should be exceptionally well dried separately before mixing, and sifted several times. A Government analysis of Lamplough's saline showed tartaric acid 45·7, sodium bicarbonate 52·4, and potassium chlorate 1·9 per cent. The Canadian Government chemist has reported that Abbey's saline showed 53·7 parts of sodium bicarbonate, 39·75 parts of tartaric acid, 5·1 parts of magnesium sulphate, and 15·3 parts of sugar, but see *C. & D.* lix. p. 730.

Summer Salines.

I

Sodæ bicarb. . . .	℥ij.
Pulv. acid. tartaric. .	℥iss.
Pulv. pot. acid. tart. .	℥iss.
Pulv. sodæ sulph. exsicc.	℥j.
Pulv. sacch. alb. . .	℥vj.

M.

II

(Popular form for Eno substitute)

Pulv. acid. tart. . .	℥ij.
Pulv. sodæ bicarb. . .	℥ij.
Magnes. sulphat. . .	℥j.
Pulv. pot. bitart. . .	℥ij.
Mag. cit. efferves. . .	℥ij.
Pulv. sacch. alb. . .	℥iv.

M.

The proprietors of Eno's fruit salt have a prior right to the use of the term as a description of effervescing saline.

III

Tartaric acid . . .	℥ix.
Bicarbonate of soda .	℥x.
Chlorate of potash . .	ʒij.
Dried sulphate of magnesia	ʒiij.
Sugar . . .	℥iij. or q.s.

Mix.

Laxative Lemonade[1]

(Improved Seidlitz Powders)

Blue paper—

Pulv. seidlitz . .	ʒij. ℈ij.

White paper—

Pulv. ac. citric. .	gr. xxxv.
Ol. limonis . . .	♏ss.

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[1] Limonade Purgative is an unofficial synonym for liq. mag. cit., B.P. Various medicinal lemonades are used in France, and occasionally in this country, for allaying the thirst of feverish and sick patients. These are hydrochloric, nitric, phosphoric, and sulphuric acid lemonades,

Magnesian Lemonade

Pulv. sacch. alb.	lb. iss.
Pulv. acid. citric.	℥v.
Mag. carb. pond.	℥iij.
Ol. limonis	ʒss.

M.

Effervescing Carlsbad Salts

Dried artificial Carlsbad salts	℥xj.
Bicarbonate of soda	℥vj.
Tartaric acid	℥vss.

Mix and dry; then keep in well-closed bottles.

Artificial Carlsbad Salts, Ph.G.

Dried sulphate of soda	℥xxij.
Sulphate of potash	℥j.
Chloride of sodium	℥ix.
Bicarbonate of soda	℥xviij.

These ingredients to be powdered separately and mixed. Sometimes the mixture is dissolved in the smallest possible quantity of hot water, and evaporated with constant agitation so as to obtain granulated crystals, or it may be allowed to evaporate slowly to get larger crystals, but the resulting 'salt' is not always uniform when made in this way.

In retailing the effervescing Carlsbad salts care should be taken to describe it as being made from artificial salts. The original formula of magnesian lemonade has the magnesia in the proportion of 6 to 4 of citric acid, with the result that the magnesia is only partly dissolved. So prepared it is a kind of effervescing milk of magnesia, but the real milk of magnesia is a mixture of magnesium hydroxide.

Seltzogene Charges are universally made from tartaric acid in small crystals, with the exception of a patented article made from acid sulphate of soda in fused cakes. The only other efficient substitute is citric acid, and if this is obtainable at the same price as tartaric acid it is cheaper, because less of it is required. We give both in the subjoined recipes :—

Two-pint Charges

Tartaric acid	ʒiv. ℈ij.
or Citric acid	ʒiv. ℈j.
Bicarbonate of soda	ʒv. ℈ij.

Three-pint Charges

Tartaric acid	ʒv. ℈j.
or Citric acid	ʒivss.
Bicarbonate of soda	ʒvij. ℈j.

Five-pint Charges

Tartaric acid	℥j. ℈ij.
or Citric acid	℥j. gr. xv.
Bicarbonate of soda	ʒx. ℈ij.

Eight-pint Charges

Tartaric acid	ʒxi. ℈ij.
Bicarbonate of soda	ʒxiij. ℈ij.

The above are all to be taken by apothecaries' weight. In practice avoirdupois ounces and apothecaries' drachms may be

each being made with the 10-per-cent. dilute acid according to the following formula :—The dilute acid ʒss., simple syrup ℥iij., water ℥xxv.; mix. To be used as a drink.

taken ; thus ½ oz. and ʒj. = ʒiv. ℈ij. ; ¾ oz. = ʒv. ℈ij. or ʒv. ℈j. ; 1 oz. = ʒvij. ℈j. ; 1 oz. ʒj. = ℥j. ℈ij. ; and 1 oz. ʒiij. = ʒx. ℈ij. The bicarbonate of soda is intentionally in excess, as it assists in retarding decomposition of the acid and alkali so as to give a gradual evolution of gas. In charging the seltzogene the acid should be put into the upper globe first, then the soda ; for if the reverse is done the solids remain partially undissolved when the water has all been used up.

CHARGES FOR SELTZOGENES.

..........PINT SIZE.

For the Preparation of Seltzer Water, Eau de Vichy, Soda Water, Sparkling Lemonade, Aërated Wines, &c.

DIRECTIONS FOR USE.

1st. Nearly fill the lower globe with water, by means of the LARGE funnel (leaving the neck empty), and then close the neck securely with the stopper, taking care that no water passes into the small globe.

2nd.—Place the small funnel above the stopper (which should be quite dry) and pass into the small globe a charge of Tartaric Acid in small crystals (White paper), and a charge of Bicarbonate of Soda in powder (Blue paper) ; then remove the stopper and funnel.

3rd.—Place the tap in the Seltzogene and screw it down QUITE TIGHT.

4th.—Incline the Seltzogene, and so pour water into the small globe until it is one-third filled. You may shake the Seltzogene from time to time with a CIRCULAR movement, keeping it always UPRIGHT, particularly when the water has been prepared for some days. An hour later pour a little more water into the top globe from the lower one, and again shake with the circular movement. In two hours or so the water is ready for drinking.

N.B.—To prevent explosion about half a tumbler of water should be drawn from the Seltzogene after being five minutes in charge.

Care should be taken to let off by the tap all the Carbonic-acid Gas before recharging the Seltzogene.

Although sufficient water to effect decomposition and dissolve the resulting tartrate of soda is poured into the upper globe, after an hour or two white lumps of a mixture of tartrate and bicarbonate of soda and tartaric acid float in the water. The excess of bicarbonate helps in the formation of these lumps, and it will be seen that after some of the aërated water is drawn off, there is brisk effervescence from the lumps, which continues until a certain pressure of gas is again reached, when the effervescence ceases. This has been found to be due to the retarding influence of the pressure of carbonic-acid gas.

Powders for making potash, seltzer, and other waters are also required, these being dissolved in the water put into the lower globe. The seltzogene-makers give formulas which are based upon medicinal requirements, and it is, as a rule, inadvisable to give as much. The following we have found to please the public palate :—

Potash Powders

Potass. bicarb. . .	ʒss.

More than this may be given if desired. It is advisable to ask customers what they prefer.

Seltzer Powders

Sodii chloridi . . .	ʒj.
Sodæ bicarb. . . .	ʒss.
Sodæ sulphat. . .	gr. j.
Sodæ phosphat. . .	gr. j.

M.

In each case for the 5-pint seltzogene. Later on in this chapter we give formulas for seltzogene syrups.

SYRUPS

As an adjunct to aërated waters, or even for the production of non-effervescing drinks, syrups are as indispensable as the water, and there is no branch of compounding in which American pharmacists are more expert than in this, the reason being that a large part of their business consists in selling effervescing drinks prepared at the soda-fountain. This is not a department which English pharmacists are called upon to cultivate; consequently we shall not attempt in this section to give our American friends points, nor shall we draw much from their budget of creams, clams, and chocolates, the which are unknown to the British palate. But it must be confessed that American drinks are as far ahead of English as a glass of Laurent-Perrier champagne is above a glass of the gooseberry article, and it might be profitable to take a lesson or two from transatlantic experience. This is not the place for that, nor is the American expertness a question of syrups, but a combination of the smartness of the soda-fountain man and the intolerable desire which the climate engenders for a long drink. We cannot reproduce the conditions in Britain, since we lack the climate.

Fruit Syrups.—With the exception of raspberry and strawberry, fruit syrups are rarely made from the fresh fruit, artificial essences, artificial colouring, and acidulated simple syrup sufficing to give combinations which are pleasing to the public. We may, however, state that the general formula for pure fruit syrups is :—Press the juice out of the fresh fruit, strain and add 6 per cent. of rectified spirit and salicylic acid in the proportion of 2 dr. to the gallon—*i.e.*, 10 oz. of S.V.R. and ʒij. salicylic acid to each gallon of juice. Set aside for twenty-four hours, to allow the pectinous precipitate to form ; decant from this, and strain the sediment through flannel, returning the filtrate until quite clear. The liquid from the above quantity should measure a gallon. In it dissolve, by bringing to the boil quickly, 12 lbs. of granulated sugar. Set aside to cool, skim, and bottle.

Strawberry Syrup

Take of fresh ripe strawberries 10 quarts, white sugar 24 lbs., water 2 pints. Spread a portion of the sugar over the fruit in layers, let it stand four or five hours, express the juice, strain, add the remainder of the sugar and water, raise to boiling-point, and strain. To the strained syrup add salicylic acid ℥ss. dissolved in S.V.R. ℥ij.

Raspberry Syrup

May be made similarly ; or take of raspberry juice ½ pint, red-currant juice syrup (1½ sugar to 1 juice) 8 pints, and mix.

The Basis for Artificially-flavoured Syrups is a mixture of 6 pints of simple syrup (B.P.) and 2 pints of water, 1 oz. of tartaric acid and 30 gr. of salicylic acid being dissolved in the water. The following are the flavours and colourings required to be added to this volume of syrup :—

Apricot : Essence of apricot ℥ss., liq. cocci ʒij.

Black Currant : Ess. black currant ʒiij., liq. cocci ℥j., caramel ℥ss.

Cherry : Ess. cherry ʒvj., liq. cocci ℥j., caramel ℥ss.

Fruiti Fru : Ess. orange ℥ss., ess. lemon ʒvj., ess. vanilla ʒij., liq. cocci ʒiij., caramel ʒiij.

Orange : Made with tincture of sweet-orange peel and oil similarly to lemon. *See* page 216.

Peach : Ess. peach ℥ss., liq. cocci ʒij., caramel ʒj.

Pear : Ess. pear ℥ss., caramel ʒij.

Pineapple : Ess. pineapple ʒiij., tr. croci ʒvj.

Plum : Ess. plum ℥ss., caramel ℥ss., liq. cocci ʒj.

The essences should in each case (except Fruiti Fru) be mixed with double their volume of rectified spirit. There are formulas for most of the essences in this book. Other fruit syrups may be made similarly, using from ʒij. to ʒvj. of the essence to a gallon of acidulated syrup, according to the nature of the essence (for some of them have a sickening effect if used excessively), and cochineal, caramel, or saffron to colour. The flavour and colour may be added, a drachm at a time, until the proper point is reached.

In the essences section are numerous formulas intended for use in aërated-beverage manufacture. Some of these may advantageously be used for compounding fruit syrups.

Ginger Syrup

Soluble essence of ginger	℥ss.
Tincture of fresh lemon-peel	ʒij.
Caramel	ʒj.
Syrup	Oj.

Mix.

Ginger-ale Syrup

Soluble essence of ginger	℥iv.
Soluble essence of capsicin	ʒij.
Soluble essence of orange	℥ij.
Soluble essence of tangerine	℥ij.
Soluble essence of lemon	ʒj.
Spirit of rose	ʒj.
Spirit of neroli	ʒj.
Citric acid	℥iss.
Cochineal colouring	ʒj.
Caramel	ʒij.
Syrup	Cong. j.

Mix.

Lemon Syrup

I

Oil of lemon	♏xx.
Rectified spirit	℥ss.

Dissolve and add

French chalk	ʒj.
Water	℥j.

Allow to stand a day or two, shaking occasionally; filter and add to a syrup made as follows:—

Sugar	℥xij.
Citric acid	ʒj.
Water	℥vij.

The oil of lemon and spirit may be replaced by 1 oz. of tr. limonis recentis.

II

Oil of lemon	ʒij.
Otto of rose	♏ij.
Rectified spirit	℥ij.
Citric acid	℥ij.
Syrup	Cong. ij.

Prepare as above.

Lemon Squash

Tincture of lemon-peel	℥iv.
Oil of lemon	℥ss.
Rectified spirit	℥ij.

Shake well, and after standing a few hours draw off the clear tincture from the oil. Add

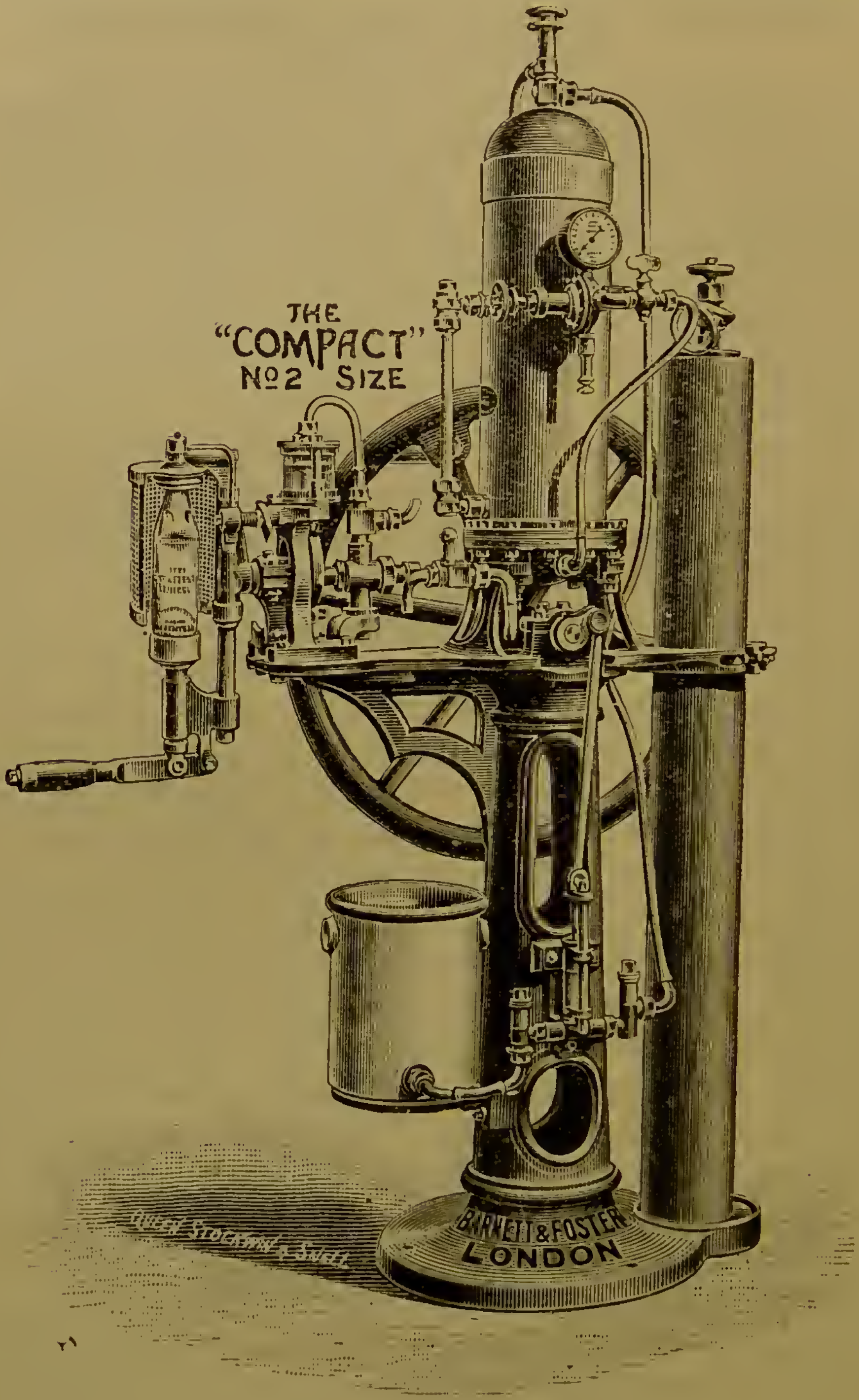
Tartaric acid	℥ij.
Syrup to	Cong. j.

Colour with tr. croci ʒj. and caramel q.s.

APPARATUS AND MATERIALS USED IN MAKING AËRATED WATERS

As the Editor of *The Chemist and Druggist* is frequently asked by those unacquainted with the aërated-water industry for information regarding the technique thereof, it may serve a useful purpose to introduce here a brief and general description of the machinery used and principal operations involved, which should be supplemented, however, by the instructions provided by manufacturers of machinery and by a few visits to a soda-water factory.

The principle involved in the industry is that water at the normal temperature and atmospheric pressure dissolves its own volume of carbonic-acid gas, and with increase of pressure the amount of gas dissolved increases at the rate of one volume for every 30 lbs. pressure. In practice it is not customary to introduce more than four volumes of the gas per volume of water. The absolutely essential parts of an aërated-water plant consist of (1) a gas-generator, (2) a gasometer, (3) a saturator, and (4) a bottler. The gas is obtained by the action of sulphuric acid upon a mixture of chalk and water or a mixture of sodium bicarbonate and water; or liquefied carbonic-acid gas may be used. The last-mentioned is obtained from natural water springs; by the complete combustion of coke; from the gases exuded in the fermentation of malt liquors; or by the action of an acid on sodium bicarbonate. The first kind of liquefied gas is better known on the Continent than in Great Britain. The others are commonly obtainable, and as the liquid is remarkably free from impurities, it is, for small makers, a convenient and economical source of the effervescing constituent of aërated waters. This gas has the distinct advantage of rendering aëration more easy, because in expansion a certain degree of cold is produced which hastens solution, since water at 40° F. dissolves 50 per cent. more gas than that at 60° F. The liquefied gas is usually confined to the production of waters on the smaller scale, and the machinery for using it is generally compact, so that it is excellently adapted for chemists.[1] A good example



of machine is here figured. This embodies all that is necessary for saturating and filling water in bottles and syphons. The open pan attached to the base is called the solution-pan, to hold the filtered water or solution of potash or the like, which is to be aërated. From this pan it is pumped up into the cylinder or saturator shown behind the gauge. A few turns of the wheel serve to throw water into the cylinder, the level inside being shown by the glass gauge at the left hand of the cylinder outside. The long cylinder at the right-hand side is the tube of liquefied carbonic-acid gas. It is easily adjusted to the saturator, and when adjusted the screw-top at the head may be opened, water meanwhile being pumped in, whereby gas and water mix thoroughly, and in a few minutes the desired pressure (140 to 200 lbs.) is indicated by the gauge. Then one may begin to bottle. The bottling arrangement is shown at the extreme left of the illustration. There are arrangements attached to it for syruping, and in the actual filling one simply puts in the bottle, shuts the cage, turns the handle with pressure, 'sniffs,' and the bottle is filled. Syphon-filling requires more care and a different filler, which, however, may be attached to the machine. The makers of all machines supply full directions with them ; and it is advisable to visit their factories when purchasing, so as to see the apparatus actually in operation. The objection to the use of liquefied carbonic-acid gas on the large scale is that, unless the factory is situated near the carbonic-acid gas works, the cost of carrying heavy steel cylinders becomes prohibitive, and there is

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[1] The following data by Mr. Thomas Maben show exactly the value of the liquefied carbonic-acid gas: - Compressed gas is supplied at $2\frac{3}{4}d.$

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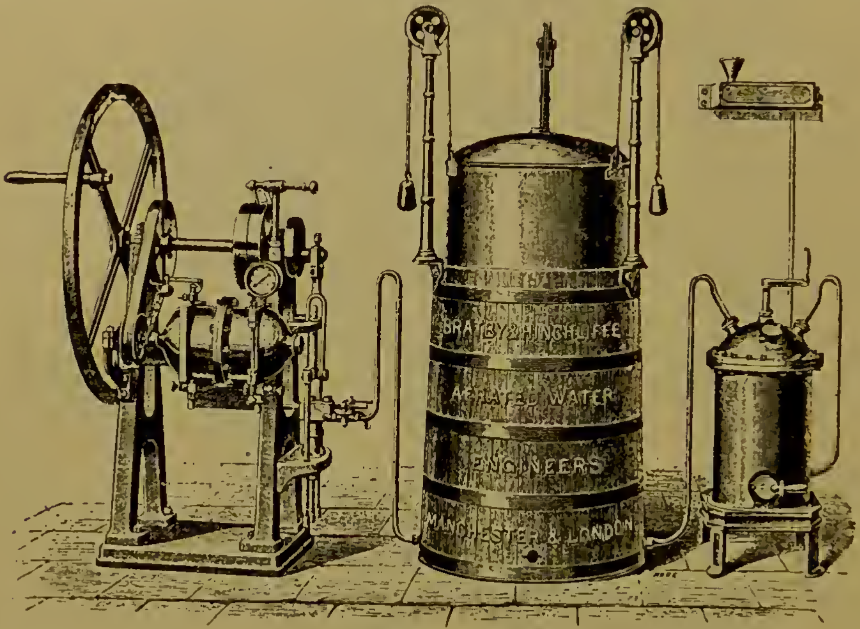
per lb., which, with discount deducted, is about 25*l.* per ton. The carriage of the cylinders is extra, and varies according to distance – say, 3*l.* per ton as an average, thus making the compressed gas cost 28*l.* per ton, as against the prime cost of soda and acid, which is not less than 22*l.*, without counting the cost of labour in preparing the gas and of the apparatus to make it. One pound of gas carbonates $7\frac{1}{2}$ dozen large bottles at 100 lbs. pressure at 40° F., and six dozen at a pressure of 130 lbs. at the same temperature. In summer, when water is rarely under a temperature of 50°, the volume of gas taken up is nearly 33 per cent. less. Taking one season with another, and remembering that the summer trade is three-fourths of the year's turnover, he estimated a fair average to be that 1 lb. of CO_2 carbonates eight dozen large bottles. This works out to 17,920 dozen bottles per ton of carbonic-acid gas, and means a saving of 6*l.* by the soda-and-vitriol process, without reckoning for labour, breakage of carboys, &c.

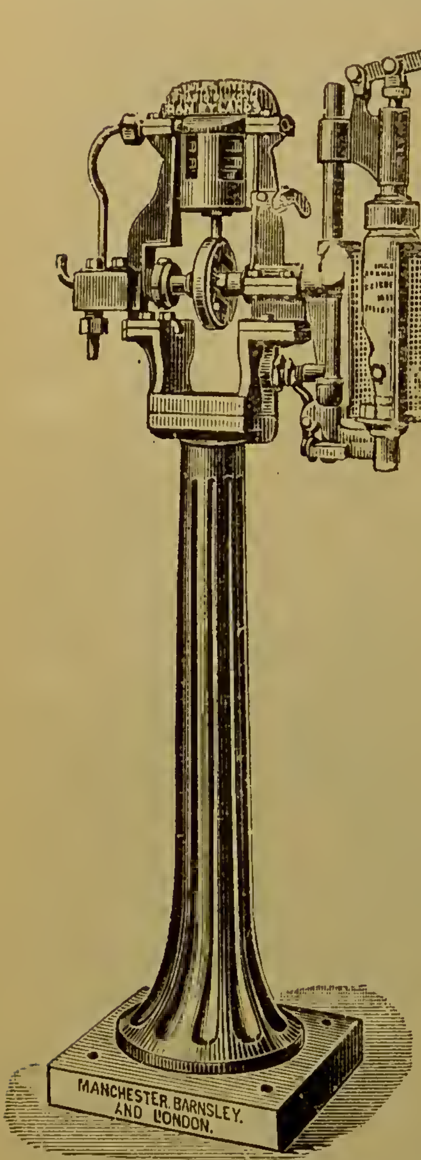
also the initial cost of the cylinders to be reckoned with, or the rent of them if they are not bought. Few large manufacturers use the gas in this form, but produce it themselves from chalk or sodium bicarbonate, as stated. The advantage of the soda is that the product of the action of sulphuric acid upon it is a liquid, whereas that from the chalk is a thickish paste of calcium sulphate, which is somewhat difficult to get rid of, some local authorities objecting to it being run into sewers. The following sketch adequately illustrates the working with either, the machinery represented being small. The cylinder on the right is the gas-generator, made of solid lead. It is virtually a Wolff's bottle, with safety-tube at the right side, gas-outlet tube at the left (leading to the gasometer), and acid-tube at the top. Into this cylinder or generator a milk of chalk and water is placed (or sodium bicarbonate and water), there being a hopper at the top for the purpose. The leaden trough at the top is for holding sulphuric acid, which descends by pipe. When the tap of this is turned on the acid flows down, enters the cylinder, and at once begins to act on the carbonate. Meanwhile the crank at the top, which actuates a mixer or agitator, is turned, whereby thorough action is ensured. If gas is evolved more rapidly than it can go off by the left-hand pipe,



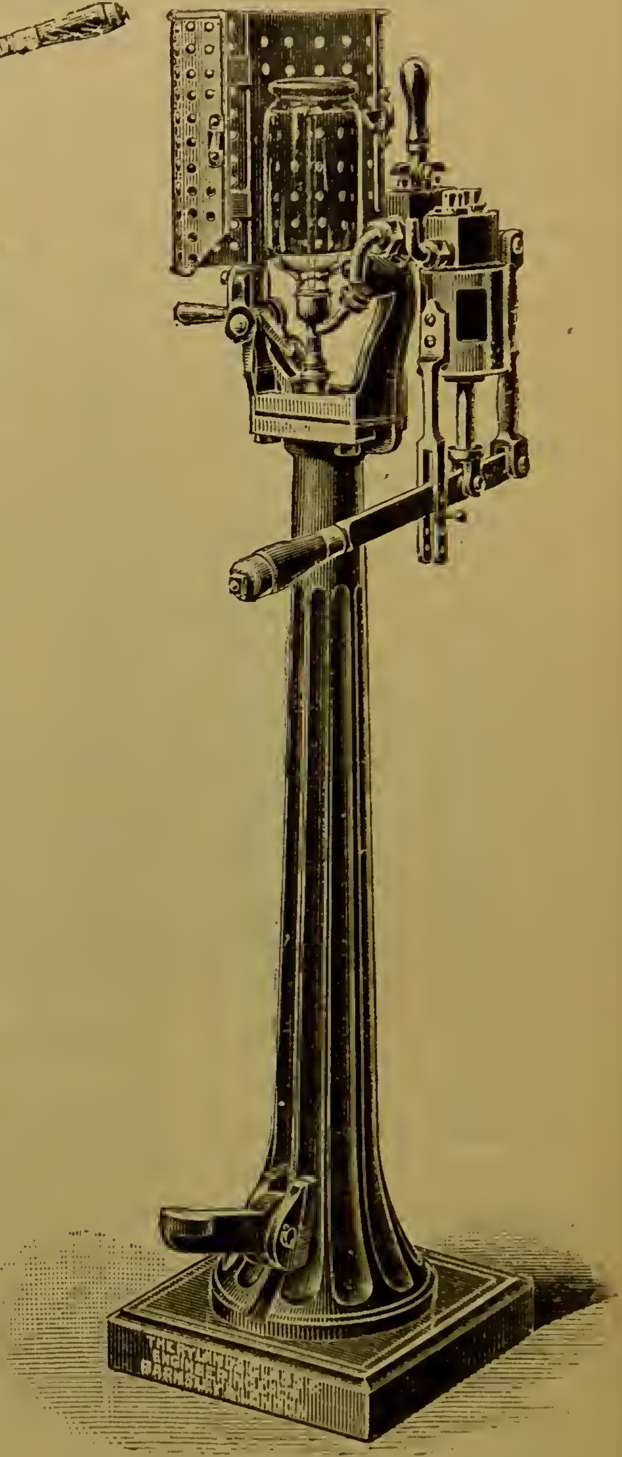
a valve in the acid-pipe is pushed up and the flow of sulphuric acid stopped for a minute, to start again when the pressure is diminished. The gas enters the tub of the gasometer, which is filled with water, and as it bubbles up it is washed. The bell rises as it becomes filled; from it the gas passes, when desired, by the pipe at the left into the saturator. It is here that the aërated water is made. Below the saturator is a small solution-pan into which water is automatically supplied. When the wheel is turned it works a pump, which forces the water into the saturator, and simultaneously it works an agitator within the saturator, thereby breaking up the water into a spray, thus effecting rapid solution of the gas. The pressure is indicated by the gauge, and if it reaches an excessive point an automatic valve comes into play, thereby ensuring safety.

Many, indeed all but a few, manufacturers begin to use the aërated water as soon as the proper pressure is indicated, and keep the whole apparatus going simultaneously with the bottling; but the highest quality of aërated water is only obtainable by allowing gas and water to remain in contact overnight. The foregoing sketch takes us up to this point, and the bottling still remains. We may note that in making soda, potash, and similar waters the liquid pumped into the cylinder is a solution of the required salts, but for sweetened beverages plain water is used, and the flavoured and coloured syrup is introduced by the filling-machine. This is the next part of the apparatus to be described, illustrations of the machines being on the next page.

In the centre of the bottle-filling machine at the top is the graduated syrup-cylinder, and at the right-hand side the bottle-holder, which is completely covered by a wire guard when the machine is in action. The syrup-cylinder is charged automatically, and when the hand-lever is moved the aërated water from the saturator rushes through it, and the sweetened liquid is swept into the bottle. When the bottle is a little more than half-filled the pressure of gas prevents more water entering; the bottler then brings the 'snifting' arrangement into action, which allows a portion of the gas to escape. For this purpose the bottle-holder revolves. The engraving of the syphon-filling machine shows the foot-lever, which fixes the syphon in the holder. The hand-lever to the right actuates the syruping-mechanism and allows the aërated water to rush into the syphon. A small lever at



Ball-stopper Bottle-filling Machine



Syphon-filling Machine

the left side presses the syphon-top lever, thus keeping the syphon open during the filling-process.

It must be understood that there are many points beyond the foregoing which one has to know in manufacturing aërated waters, but we are supposed to be addressing those who know nothing about the matter, and the object of the description is to give them a general idea of the principles of the manufacture. The arrangement of the plant differs greatly in practice. For example, we have inspected a factory in which the water-supply came from the top of the house, where there was a series of efficient filters; the syrup and water tanks were in another room, the gas-generating arrangements in another, all on a higher level than the carbonating and filling room, where the saturators stood in a position quite remote from everything else. But in this case the whole arrangements were focussed to the fillers, and the block-tin pipes were the rays which converged upon these filling-machines through the saturators. The beginner is perhaps the better of not knowing the wealth of ingenuity and capital invested in such a factory, for as every detail and every shilling goes to bring the aërated beverages nearer perfection, he may become despondent at the outset regarding the capabilities of his small venture, and that is unnecessary. Several points in regard to materials require special attention, and we now comment upon them.

The water, from whatever source obtained, must be of sparkling brightness, and remain so after aëration and filling into bottles. It is customary to filter it, and on the small scale this may be done with an ordinary service-filter, such as a 'Berkefeld' or 'Mawson.' Alternate layers of animal charcoal and sand are used by large makers, but the filter must, as a rule, be adapted to the water which has to be treated.

In making soda and potash waters the required proportion of the salt should be dissolved in warm water and this solution added to the bulk. The mixture is then well agitated, and allowed to stand for twelve hours or more in order that it may clear. Slate tanks are used when the volumes of solutions dealt with are large.

The sulphuric acid used must be quite free from nitrous contamination, otherwise oxides of nitrogen appear in the carbonic-acid gas and destroy colours, flavours, and pungency. Some manufacturers pass all their carbonic-acid gas through scrubbers wetted with permanganate of potash solution, so as to be doubly sure of the absence of nitrogen oxides.

Air, the chief cause of over-vigorous ebullition of the water when a bottle is opened, must be excluded as much as possible by allowing some of the gas, before it is passed into the gasometer, to escape for a minute or two from the generator.

SOLUBLE ESSENCES

are now properly regarded as the most important factor in this business. It was between 1876 and 1878 that chemists awoke to the fact that such a thing as a soluble essence existed, one or two well-known firms having put soluble essence of ginger upon the market, but as early as 1859 the idea had been suggested by Mr. B. S. Proctor. The essence mixed freely with water without giving opalescence, even on acidifying. Quickly a soluble essence of lemon followed, and these two preparations still remain by far the most important of a lengthy series. They will serve to illustrate the principles upon which soluble essences are made.

Soluble Essence of Ginger.—A research by Dr. J. C. Thresh ('Year Book of Pharmacy,' 1879) revealed the facts that the pungency of ginger rhizome is due to a syrupy fluid, which he named gingerol, and that the flavour is imparted by an essential oil. Gingerol appears to be non-resinous, and is as soluble in proof spirit as in rectified spirit. The rhizome contains several fatty and resinous bodies which are practically tasteless, and are partially precipitated from a tincture on the addition of water. It is these substances, therefore, which give the opalescence referred to, and it is obvious that their removal should not prejudicially affect the active properties of a ginger essence. This is the object aimed at. The process proposed by Thresh on the basis of his research is as follows :—

> Take of strong tincture (1 in 1) of the finest Jamaica ginger 1 pint, add in small proportions at a time finely powdered slaked lime, shaking vigorously after each addition, until the tincture ceases to lose colour, throw the whole upon a filter, and pass through the residue proof spirit until the product measures 2 pints. Now add drop by drop dilute sulphuric acid until the rich yellow colour of the tincture suddenly disappears, let stand for twenty-four hours, filter, dilute with water to 4 pints, shake with a little powdered pumice or silica (by no means lime or magnesia), and filter at 0° C. if possible.

The lime removes the two chief resins of the ginger, and the sulphuric acid throws down the dissolved lime. Then neutral resin, wax, fat, &c., are precipitated by the water. This process is followed more or less generally, but by adhering to the details exactly we have never succeeded in getting a first-class product.

Another point deserves attention—viz., the relative strengths of gingers from different sources. Thresh found that Jamaican, which is most highly esteemed, is the weakest, yielding 0·75 per cent. of oil and 0·66 per cent. of gingerol ; African gave 1·615 per cent. and 1·45 per cent. respectively ; but the last-mentioned is considered to have an objectionable flavour. The principal direction in which Thresh's process requires modification is to dilute the strong tincture with its own volume of water before adding alkali. It may be suggested, Why not extract the ginger with proof spirit, seeing that gingerol is as soluble in that menstruum as in rectified spirit? It would certainly be cheaper ; but ginger contains a large percentage of useless extractive matters, which are soluble in proof spirit but not in rectified spirit, and it is taken for granted that it is not desirable to extract them. At all events, most commercial soluble essences of ginger are somewhat below proof strength, and contain just about 1 per cent. of non-volatile matter ; hence they are not made by exhausting the rhizome with proof spirit. An American pharmacist speaks highly of an Extract for Ginger-ale, made by percolating 16 oz. of ginger and 4 dr. of capsicum with a menstruum consisting of 64 oz. of proof spirit in which 6 dr. of bicarbonate of potash is dissolved. The bicarbonate is supposed to act as a deresinising agent, which it does not do. There is no doubt, however, that a proof-spirit tincture gives an infinitely finer soluble essence than a rectified-spirit one, and we have but to overcome the prejudice of custom to appreciate the difference. The proof tincture may be used in any of the formulas noted here, but it must be made 1 in 2.

The choice of a deresinising agent is a matter of importance. Lime is undoubtedly the most effectual thing, but it is a bit too caustic. Mr. B. S. Proctor's original idea was to have a transparent ginger syrup, and he made it by precipitation with hydrate of alumina formed *in situ*. Upon this principle a passable essence can be quickly made by mixing 20 oz. of tr. zingib. fort. with an equal volume of water containing 40 gr. of potash alum; the mixture should be agitated thoroughly for twenty minutes, then ʒvss. of liq. potassæ, B.P., added, again agitated, and allowed to settle for two hours (*days* preferably), when it may be filtered. The essence is somewhat deficient in aroma. Phosphate of lime, precipitated *in situ*, is also used in the same way, as noted below. Dr. Thresh first proposed heavy carbonate of magnesia, but the essence so made becomes muddy after standing for a few weeks; the light carbonate, in the proportion of 1 oz. to the pint of tr. zingib. fort., has not this objection. To use it mix the magnesia with the tincture to a smooth paste in a mortar, and pour in the rest of the tincture slowly, stirring all the time. Add the water in the same way, and transfer to a bottle; shake occasionally for six hours, allow to settle, decant the clear essence, and filter the sediment. The chief objection to this method is the loss of essence by absorption. The flavour and pungency of the essence are good, but it should be noted that one effect of the use of a bulky powder like light carbonate of magnesia is that it absorbs much of the essential oil; indeed, this is the reason why the carbonate is used in making aromatic waters. This is wherein slaked lime has the preference—a relatively smaller quantity precipitates the resins, and absorbs less of the essential oil. It is best to follow Thresh's directions regarding the addition of lime, as the amount required varies with the resin of the ginger. As already stated, African ginger contains most resin, and requires three times as much lime as Jamaican, which is the great objection to it. We have not found the addition of sulphuric acid necessary when proceeding as follows :—Mix the tincture with its own bulk of water, add the lime, filter after a day ; wash the lime with a little proof spirit ; mix the two liquids. Add 2 or 3 oz. of fine sand, shake well, set aside until required, and filter. Well-washed pumice may take the place of sand. Pumice alone has been recommended for making soluble essence of ginger, but it is quite useless for removing the inert resins, fat, &c., as it only clears the fluid of what is precipitated by water, and after that much still remains to be got out.

An excellent essence is made by the following method suggested by Mr. W. H. McGrath. Exhaust 24 oz. of bruised ginger with a mixture of 45 oz. S.V.R. 60 o.p. and 15 oz. of water by maceration and percolation. The product should be 45 oz. Mix 40 oz. of the tincture with the same of water, add phosphate of soda $\frac{3}{4}$ oz., dissolved in boiling water 5 oz., then chloride of calcium $\frac{1}{4}$ oz. in water 5 oz. Shake, set aside for twelve hours, and filter. Place the filtrate in a still, and distil by a gentle heat 30 oz., which reserve.[1] Continue the distillation, rejecting the next 40 oz., and when the contents of the still are cold, rinse out with the 30 oz. of reserve. Filter this mixture, and the product is 40 oz. of essence, the aroma of which is improved by adding 20 minims of essential oil of ginger dissolved in S.V.R. $\frac{1}{2}$ oz.

Essence for Ginger-ale.—Having obtained a soluble essence of ginger, we have won half the battle in the production of essence for ginger-ale; but the other half is, if anything, the stiffer fight, the reason being that there are so many varieties of flavour appreciated by the trade. Belfast ginger-ale is distinguished from all others by a subtle flavour of cinnamon, with something suggestive of vanilla, rose, and other secondary flavours, chief of which is lemon. For the rest there are added Jockey Club, bergamot, cloves, jargonelle pear, and other ethereal compounds, which are distinctly objectionable. A little capsicum is an almost invariable addition. The following selection of formulas gives sufficient choice:—

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[1] It may be stated here that the superiority of some soluble essences of ginger, lemon, &c., is solely due to their being distilled after they have been treated with alkali. We have heard Mr. McGrath's method above described mocked by some manufacturers ; nevertheless we know as a fact several brands of essences the aroma of which is a mystery to other makers, and the whole secret of these is that they are distilled. Distillation has the effect of conserving the aroma and increasing solubility.

I

Soluble essence of ginger .	℥x.
Tinct. of fresh lemon-peel	℥j.
Essence of vanilla . .	♏xx.
Tincture of capsicum .	ʒj.

Mix.

II

Oil of cinnamon . .	♏x.
Oil of bergamot . .	♏xv.
Oil of lemon . . .	ʒss.
Rectified spirit . .	℥ij.

Mix, and add mag. carb. lev. ʒj. mixed with water ʒiij., filter, and add to the filtrate

Capsicin	ʒss.
Essence of apricot . .	ʒiij.
Sol. essence of ginger to .	Oj.

Mix.

III

Essence of vanilla . .	℥ss.
Spirit of cloves . .	℥ij.
Tincture of cinnamon[1] .	℥iv.
Tincture of lemon-peel .	℥vj.
Sol. essence of ginger to .	Oiv.

Mix.

IV

Cort. cinnamom. . .	℥j.
Sem. cardamom. . .	℥ss.
Caryophylli . . .	ʒiij.
Fruct. capsici . .	ʒj.
Ess. zingib. sol. . .	Oij.

Bruise the solids and macerate in the essence for a week, shaking occasionally every day, then filter.

Colouring must be added to the whole of the foregoing—tr. croci ʒij. and sacch. ust. ʒij. to each pint is best—but if intended for personal use the colouring may as conveniently be added to the syrup.

Soluble Essence of Lemon.—The flavour of oil of lemon chiefly resides in two constituents, citral and citronellal, two aldehydic bodies, which are not together present to a greater extent than 10 per cent. It has been proposed to determine the value of the oil by the percentage of the former constituent, the proportion of which varies from about 4·5 to

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[1] May be omitted. If so, double the vanilla.

7·3 per cent. in genuine oils. The greater proportion of the oil is made up of limonene, which is a terpene quite valueless for the purpose of flavouring. It is to the presence of this terpene that oil of lemon owes its poor solubility in rectified spirit. Citral and the other flavouring constituents are more soluble. From these facts it is obvious that the proposals made at various times, since soluble essence of ginger was introduced, to make soluble essence of lemon by the same method, are quite unscientific. We have no resin to precipitate or remove by alkali, whereas the flavouring aldehydes are partly decomposed by alkalies. The first proposition in regard to soluble essence of lemon was to shake together 1 part each of the oil and slaked lime and 5 parts of rectified spirit. The result, after filtration, is a dark-coloured solution in which the odour of lemon is exceedingly deficient. Here the citral is substantially destroyed. Following upon this came the old carbonate of magnesia method, an ounce of the oil being 'killed' by stirring in a mortar with an ounce of light carbonate of magnesia, adding 7 or 8 oz. of rectified spirit, and filtering the milk immediately. A fairly soluble essence is the result, because the magnesia absorbs most of the terpenes, and along with them some of the citral; but the greater solubility of the latter in spirit always ensures that a fair proportion of it will remain in solution. Much spirit is wasted, as the filtrate rarely exceeds 5 oz. Nevertheless, for extemporaneous preparation of a soluble essence from the oil, there is no process better and quicker than this, and it is much used by manufacturers of aërated waters.

Another process is to shake 1 part of the oil with 4 parts of rectified spirit for a quarter of an hour or more, and set aside to allow the surplus oil to separate and the spirit to clear. Standing overnight suffices for this purpose. The spirituous solution is then drawn off, and on adding to syrup it is found to give a nice lemon flavour, and although cloudy that objectionable feature disappears when added to the water.

It is well to remember that most essential oils are soluble to the extent of 1 in 500 of water, and few are less soluble than 1 in 1,000, so that 4 drops of oil of lemon would of itself dissolve in an ordinary aërated-water bottleful of water; indeed, lemonade syrup is also made by mixing 1 oz. of the oil with 4 to 5 oz. of powdered citric acid, and gradually adding 2 gals. of cold syrup, this being in the proportion of 2 drops of oil to 1 oz. of syrup. The syrup, however, is not clear.

The best lemonade and first-class soluble essence of lemon are made from lemon-peel, and the subjoined formulas for fresh and dried peel leave little to be desired, except that they are not very strong. What the manufacturer should aim at is to get a strong tincture and fortify it with the flavouring principles of the purest lemon-oil obtainable.

I

Fresh lemon-peel (freed from the inner portion by grating) . . .	℥iv.
Fresh Tangerine orange-peel (ditto) . . .	℥j.
Rectified spirit . .	℥xij.
Water	℥viij.

Macerate four days, strain, press, and filter.

II

Dried lemon-peel (cut small)	℥iij.
Dried orange-peel . .	℥ss.
Rectified spirit . .	℥x.
Water	℥x.

Macerate for a week, strain, press, and filter, and add to the filtrate terpeneless oil of lemon ♏x. dissolved in absolute alcohol ʒj.

Always be careful to exclude the white pulpy portion of lemon-peel in making tincture from it. It has a bad flavour and wastes spirit. The use of terpeneless oil of lemon for strengthening the flavour of the soluble essence is a course which has only to be taken once to be appreciated.

It would not be desirable, were it possible, to give formulas in this volume for even a tithe of the soluble essences offered to the trade under fanciful names. Such preparations are, as a rule, clever combinations of well-known flavours, the reproduction of which, and of new varieties, should not present much difficulty to any chemist who has at his disposal a series of artificial fruit essences, essential oils, tinctures, and French bouquets. We give here a few specific formulas as examples, and may warn the compounder to keep the *fruit* always prominent and the *flower* subsidiary, as few palates can appreciate the taste of scents.

Orangeade Essence

Fresh Seville orange-peel	℥viij.
Tangerine orange-peel	℥ij.
Lemon-peel	℥j.
Proof spirit	Oiij.

Prepare like soluble essence of lemon, and to the filtrate add

Essence of vanilla	ʒij.
Essence of cinnamon	♏xx.

Sarsaparilla Essence

Conc. comp. decoction of sarsaparilla	℥xij.
Oil of peppermint	♏x.
Oil of wintergreen	♏xij.
Oil of cloves	♏vj.
Rectified spirit	℥v.
Water	℥iij.

Dissolve the oils in the spirit and add to the water, previously mixed with a drachm of light carbonate of magnesia; filter and add to the sarsaparilla decoction.

Lemon-squash Essence.

Sol. essence of lemon (No. I.)	℥x.
Oil of bergamot	ʒj.
Asbestos, in shreds	ʒj.

Shake together and filter.

Hop Tonic Essence

Tincture of hops	℥iv.
Tincture of chiretta	℥j.
Conc. comp. infusion of gentian	℥ij.
Sol. essence of lemon	ʒij.
Caramel	℥ss.
Rectified spirit	℥v.
Water to	℥xx.

Mix the tincture of hop with the same volume of water and ʒij. mag. carb. lev. Shake well for half an hour and filter. Wash the filter with 1 oz. of rectified spirit and the same of water, and mix the filtrates with the other ingredients. The addition of ol. lupuli ʒj. much improves the flavour.

Hot Tom Essence.

Gentian	℥ij.
Ginger	℥ss.
Orange-peel	℥ss.
Capsicum	ʒij.
Cochineal	ʒij.
Rectified spirit	℥vj.
Water	℥xiv.

Make a tincture from the powdered materials by maceration and percolation, and add to the percolate ʒij. of caramel and ʒij. of ess. bouquet.

Kola Essence

Fluid extract of kola[1]	℥iv.
Tincture of canella	℥ss.
Tincture of orange	℥ij.
Essence of cherry	ʒiij.
Essence of cloves	ʒj.
Proof spirit to	℥xx.

Mix.

General Flavours

which may be mixed with any medicinal tincture or colouring so as to produce some peculiar beverage:—

I

Oil of wintergreen	♏x.
Oil of bitter almonds	♏xx.
Oil of bergamot	ʒj.
Essence of vanilla	℥j.
Soluble essence of lemon (No. II.) to	℥xvj.

Mix and filter.

II

Essence of pineapple	ʒv.
Essence of celery	ʒj.
Peruvian balsam	ʒiss.
Essence of vanilla	℥ij.
Sol. essence of lemon to	℥iv.

Mix and filter.

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[1] Made from carefully roasted kola nuts (*i.e.*, roasted as coffee is) ground in a mill and exhausted by repercolation with proof spirit: strength 1 in 1. The kola drinks appreciated most in Scotland have a vanilla flavour.

COLOURINGS

Caramel is the most important colouring matter used in the manufacture of aërated waters, being employed largely, while the appearance of the beverages greatly depends upon the nature of the caramel used. The best caramel can only be obtained from pure white cane sugar. Amongst the best sugars to use are Crossfield's, Macfie's, Martineau's, and the Glebe Co.'s granulated white sugars. It is a mistake to use inferior sugar under the idea that the colour does not matter, because the resulting caramel gives deposits in syrups. To make a pint of caramel, put 14 oz. of sugar into a copper pan, 8 inches or more in diameter, and heat the pan by means of a Bunsen or Fletcher flame turned low down so that the fusion of the sugar may proceed slowly but steadily. Stir all the time with a glass rod. Ere long the sugar begins to blacken and swell up, and as the vapour is somewhat irritating to the eyes it is advisable to conduct the operation near a window open at the top. When the sugar begins to thicken and blacken, it should be occasionally tested by putting a drop on a cold ointment-slab, and whenever one of these drops becomes brittle and looks black, the heating should be stopped. Now add carefully to the contents of the dish 8 oz. of boiling water: this should be done at first only at the rate of a few drops at a time, as there is considerable evolution of steam, the mixture being well stirred meanwhile; and as enough syrupy caramel to pour off collects, this should be poured into a porcelain dish or jug kept handy, more of the boiling water being then added, and so on. The resulting caramel, if made properly, and from a good sugar, should answer the McGrath Test,[1] viz. :—Drop 3 or 4 drops of the caramel into a test-tube, add about 1 dr. of water, mix, add 3 or 4 drops of phosphoric acid, shake well, nearly fill the test-tube with water, and mix. There should be no precipitate. The average quantity of this colour required for a gallon of syrup is 6 fl. dr., which is enough for the tint of ginger-ale.

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[1] *The Chemist and Druggist*, January 7, 1893, page 9.

Orange Tints are best imparted with saffron, aniline-orange, or similar artificial dye-stuffs. The phosphine tint requires to be darkened with caramel. Chrysoidine is a darker colour, and is obtainable freely soluble in water. Many other orange colours are available in the dry state. One ounce of the dry colour should for factory use be dissolved in a gallon of water, and a sufficiency of this added to the syrup to give the tint desired. Some orange and yellow colours become pink in presence of acids, and should be avoided.

Red Colouring.—Liquid cochineal is he best. *See* the recipes on page 283. The dark red colour of cherry-juice is a mixture of cochineal and caramel; but sometimes magenta is used instead of cochineal. A little magenta with cochineal improves the colour wonderfully.

Other Colours are obtainable by judicious combinations of the foregoing, or by the use of fast aniline colours, which in small proportions are harmless.

SYRUPS

The syrup universally used in the aërated-water trade is somewhat weaker than pharmacopœial simple syrup—viz., s.g. 1·175–1·225, as compared with the B.P. 1·330. It is made from the best granulated white sugar, and not from 'Dutch crushed' by any means. The formula for it is:—

White sugar	12 lbs.
Salicylic acid	℈iv.
Water	a sufficiency

Heat a gallon of the water to boiling, add the sugar, and dissolve by stirring. As soon as dissolved remove from the fire and allow the scum to rise; skim it off. Rub up the acid with a little water in a mortar to a cream, add a few ounces of hot syrup and transfer to the bulk; then wash out the mortar with sufficient hot water to make the syrup measure 2 gals.

The Addition of a Preservative to beverage syrups is not essential, but it is the custom to add either formalin, salicylic acid, or a bisulphite, such as sodium or calcium bisulphite, or sodium metasulphite; but the latter are objectionable, the sulphurous acid often helping to bleach colours and destroy odours. Saccharin may be used instead of salicylic acid, both as a preservative and as a sweetener.

Saccharin Sugar Syrup

Saccharin	375 gr.
Sugar	15 lbs.
Water	2½ gals.

Dissolve.

Saccharin Syrup

Saccharin	2 oz. 25 gr.
Boiling water	5 gals.

Dissolve.

Saccharin is rarely used alone. A pamphlet on the use of saccharin may be obtained free from Messrs. Wilson, Salamon & Co., Queen Victoria Street, London, E.C.

Acid Solution for syrups is made by pouring 15 oz. of boiling distilled water upon 25 oz. of citric acid, filtering the solution when sufficiently cool to handle, and making up to 50 oz. with water. Each fluid ounce of this solution represents ½ oz. of citric acid. From 3 to 5 oz. of the solution are required for each gallon of syrup; lemonade, ginger-ale, and orangeade take the largest quantity. Tartaric acid is sometimes, for cheapness, substituted for citric acid, and there are also various mineral substitutes, such as phospho-citric acid, which are reckoned to be, weight for weight, equal to citric acid.

Heading is imparted to aërated beverages by means of preparations of saponin-drugs such as quillaia-bark, soap-berries, and senega. These are called by various names, such as 'Foam Extract,' 'Gum Syrup,' 'Liquid Heading,' 'Eau Savonette,' &c. Quillaia is most used, the tincture of it being made by percolation with a menstruum consisting of 1 part of rectified spirit and 3 parts of water. Strength of the tincture, 1 in 3. It is sometimes decolorised by filtration through bone-black. Tea-seed cake (obtained in the expression of oil from the seeds of *Camellia oleifera* in China) contains about 10 per cent. of saponin, and is, therefore, one of the richest substances in this class. It is known in Hong-Kong as 'Cha-tsai-peng,' a thin circular cake, but a finer kind in powder is 'Cha-tsai-fau.'

The following recipes show how syrups are compounded:—

Hot Tom

Soluble essence	℥ij.
Citric-acid solution	℥iv.
Caramel	ʒij.
Liquid cochineal	ʒij.
Syrup to	1 gal.

Mix.

Temperance Hock

Angostura bitters	ʒij.
Essence of vanilla	ʒss.
Lemon syrup	℥xx.

Mix.

An ounce or 1½ oz. to each bottle.

Ginger-ale

Caramel	℥ss.
Citric-acid solution . .	℥iv.
Ginger-ale essence . .	ʒij.
Syrup to . . .	1 gal.

Mix.

Jubilee Pop

Soluble essence of ginger .	℥ij.
Soluble essence of lemon .	℥j.
Soluble essence of orange .	℥ss.
Orange aniline . .	gr. v.
Cochineal-colouring . .	℥ss.
Tartaric acid . . .	ʒij.
Rose-water . . .	℥x.
Syrup to . . .	Cong. j.

Dissolve the tartaric acid and orange aniline in the water, mix the rest of the ingredients with the syrup, and add the watery solution. Mix.

Lemonade

Soluble essence of lemon .	℥iss.
Tincture of quillaia . .	ʒiss.
Citric-acid solution . .	℥iv.
Syrup to . . .	1 gal.

Mix.

Orangeade

Soluble essence of orange	℥iij.
Solution of orange colour	℥ss.
Tincture of quillaia . .	ʒiss.
Citric-acid solution . .	℥iv.
Syrup to . . .	1 gal.

Mix.

It will be seen that the proportion of essence varies from 1 to 3 oz. to the gallon of syrup. The tincture of quillaia should not be added beyond ʒij. to the gallon. Of these syrups $1\frac{1}{2}$ oz. is used for each bottle, and the quantity is regulated by the machine filler as required. Syrups should be perfectly clear, and if, after standing a day, they do not settle clear, they should be filtered through a felt bag.

SYPHON TRADE

At this point, some remarks regarding the syphon trade are appropriate. This is now such an important part of the chemist's business that it can only be carried on profitably by looking rigidly after the syphons. Customers do not expect to get syphons given with the aërated water, and cannot reasonably object to be asked to return them when empty. But if the vendor does not look after his property it is very certain that a number of careless customers, who leave such matters to their servants, will let the syphons drift to the bottle dealer or, in fragments, to the dust-heap. Some chemists make a charge of *2s.* or *2s. 6d.* on every syphon as it leaves them. This practice secures safety, but it no doubt checks trade. All that is necessary, as a rule, is a strict system of account and a periodical examination of the accounts. Chemists' printers now supply books of labels for syphons, and the following are examples of labels actually in use. The first is a gummed label, one half of which is put on the syphon and the other part placed in the syphon book :—

No. ______________ *Name* ______________ *Address* ______________ ______________ *Date* ______________	*No.* __________ *Date* __________ This Syphon must be returned within fourteen days, otherwise it will be charged 2*s*. ______________ (NAME AND ADDRESS.)

Instead of using a counterfoil, a record may be kept in a book ruled thus :—

Nos.	Name and Address	When Lent	When Returned

The label for this system is :—

This Syphon is lent until empty ; if not returned within thirty days will be charged 2*s*. 6*d*.

LEMONADE.

(NAME AND ADDRESS.)

No. ______

Casual customers should always be asked to pay for the syphons.

ALES AND BEERS

The popular 'non-alcoholic' brewed beverages are a misnomer, as they contain alcohol ; still the percentage is small—viz., 2 per cent. of proof spirit (about 1 per cent. absolute alcohol), or the equivalent of a dessertspoonful of good whisky or brandy in a bottleful of ginger-beer. According to the Revenue Acts of 1880 and 1885, 'beer' is a brewed liquor containing more than 2 per cent. of proof spirit. When this enactment came to be applied, and makers of ginger-beer were prosecuted for brewing, and retailers prosecuted for selling, ginger-beer without licences, the Government agreed to treat ginger, herb, hop, and similar beers, containing less than 3 per cent. of proof spirit, as non-excisable. And so it has remained as a rule, not a law.

The Brewing of these liquors is not a process which generally falls to the lot of the chemist, although some are noted for the quality of their 'pop.' We cannot enter here into all the details and precautions of brewing, but merely indicate briefly the general principles to be observed regarding non-excisable beers.

The 'Wort,' or saccharin solution, used for making non-excisable beers varies in strength from 8 oz. to 16 oz. of sugar per gallon. Such solutions, if fermented carefully and completely, are capable of giving liquors containing far more than 3 per cent. of proof spirit, and if the temperature and other conditions are favourable, an excessive percentage of spirit will be produced; but it is the aim of the brewer to keep that down, and try to produce a sweet beverage. The best proportion of sugar for ginger-beer is 12 oz. to the gallon, but for hop-ales not more than half that quantity should be used.

The Ferment employed is yeast. The compressed variety should be used in preference to brewer's yeast, which is often feeble when it is purchased. Half an ounce of compressed yeast is sufficient for 10 gals. of brew. It should be mixed with a pint of the brew, and allowed to macerate at 80° F. for half an hour or an hour before adding to the bulk. The best brands of compressed yeast are generally almost free from secondary ferments; but the chief impurity of this nature is the lactic ferment, the action of which should be prevented by conducting the fermentation at the normal temperature. It is imperative for success in brewing that the process should not be conducted in an apartment where there is much dust, as there the brew is almost certain to be affected by various micro-organisms falling into it and setting up secondary fermentations, which, though slight in amount, materially alter the flavour of the beer. The ropiness of ginger-beer is due to this, the bacterium which causes it being one seldom absent from the air.. The brewing-house should be a cool place with a stone floor, frequently washed by flushing ; it is better, indeed, to brew in a washhouse than in one's back shop.

The temperature of the 'wort' when the yeast is added should not exceed 70° F. The brew should then be set aside in the shade at the normal temperature, the tub being covered with a clean but not airtight wooden cover. It is a mistake to use for fermentation a barrel the interior of which is only accessible through the bunghole, as one can never know when it is clean or how the fermentation is proceeding.

The liquor should not be disturbed for at least eight hours, and any time between that and twelve hours strain it through a twill filtering-bag, and, in the case of ginger-beer, bottle immediately or rack it in casks.

Ginger-beer should be cloudy. This characteristic is obtained by boiling the ginger and other ingredients in the water. In addition to the formulas already given the following approved methods of making the beer may be quoted :—

I

Bruised Jamaica ginger	℥iv.
Lemons . . .	4
Cream of tartar . .	℥ij.
Citric acid . . .	℥ss.
Sugar	lb. iij.
Rose-water . . .	℥xvj.
Boiling water . .	Cong. iv.

Slice the lemons, and put them, with the other ingredients, into a suitable non-metallic vessel. Pour on the boiling water. Macerate overnight, strain, add 2 oz. of yeast and ferment eight hours. Strain again and bottle.

II

Best ginger (bruised) .	℥iss.
Cream of tartar . .	℥j.
Loaf-sugar . . .	lb. iss.

Put all the ingredients into an earthen vessel and pour on a gallon of boiling water ; when nearly cold add a gill of yeast, cover over with a blanket, and let it stand in a warm place till next morning. Then skim it and run through a filtering-bag, bottle, cork well, and tie down. In three days it is fit for use. A little lemon-juice is considered an improvement by some.

Both of these beers have peculiarities. The first is suitable for manufacturing purposes, and has a nice taste. The second is a formula which has been used in the family of Dr. William Hardman, Blackpool, for more than fifty years. It is sweet, and is with difficulty kept under the regulation limit of proof spirit.

Sometimes ginger-beer is made without yeast, as by the following recipe :—

Boil 6 oz. of ginger in 5 gals. of water for an hour, then add 5 lbs. of loaf-sugar, 5 oz. of lemon-juice, and 4 oz. of honey. Strain, and when cold whip up an egg with the mixture, and flavour with essence of lemon. Allow to stand for a few days and bottle.

We have examined a powder which has some repute for imparting additional body to fermented and brewed beverages, particularly ginger-beer, and getting them into perfect condition within twenty-four hours after bottling, without either fermenting or brewing. We found the composition of the powder to be—

Pulv. zingib.	℥vj.
Pulv. gum. acaciæ	℥ij.

M.

A teaspoonful of this is added to each gallon of beer.

The idea of making ginger-beer 'without fermentation' simply means that yeast-cells and micro-organisms from the air get into the brew and decompose sugar in the usual way.

To Stop Fermentation and preserve the beer it is necessary to add a preservative, but this should not be done within thirty-six hours after the brew is started, and only after the liquor has been strained. This particularly applies to draught ginger-beer, for which the best preservative is bisulphite of lime solution in the proportion of a drachm to the gallon, or 10 gr. of potassium or sodium metasulphite. For bottled beer salicylic acid 8 gr. to the gallon is better. Saccharin has also a preservative influence, but it should be used rather with the object of reducing the quantity of sugar to that required for complete vinous fermentation. The late Mr. John Pocock recommended a quantity of sugar to be used equal to 4 oz. per gallon, and the rest replaced by saccharin, 25 gr. of which is equal in sweetening power to a pound of sugar; but even with saccharin a preservative must be added to prevent acetous fermentation, and a sulphite is best for this.

Ginger-beer Foam.—The white of one egg added to 2 gals. of any cold acid syrup will produce a rich foamy head. A heading is also imparted with quillaia, which is sold as a liquid extract, powdered extract, and even the powdered bark.

In regard to other non-excisable beers it is necessary to note that a smaller proportion of sugar is required, 12 to 16 oz. to 2 gals. being sufficient for hop-ale; but much depends upon local taste in this matter.

Hop-ale of the best quality is made direct from hops exactly in the same manner as ordinary bitter ale, with a malt and sugar wort adjusted so that the fermented liquor may not contain more than the non-excisable percentage of proof spirit. Considerable skill is required in making these beers. The quantity of hops used is 1 lb. to 12 gals. of boiling water. After standing for three hours in a covered vessel the infusion is strained through a twill bag, and in it are dissolved 7 lbs. of sugar and 1 lb. of malt extract, the whole being made up to 12 gals. with water, and when the temperature reaches 70° F. 1 oz. of compressed yeast is added. Ferment eight hours, strain, add 1 oz. of bisulphite of lime solution and a handful of isinglass finings; then rack for three days and bottle. Subjoined are another method and a formula for hop-ale essence. It is such formulas as No. II. which we imagine most of those who use this book will require:—

I

Demerara sugar . .	lb. v.
Saccharin . . .	ʒiss.
Hop-ale essence . .	℥iss.
Ginger-ale essence, No. .	℥ss.
Caramel . . .	℥ss.
Boiling water . . .	8 gals.
Brewer's yeast . .	℥v.

Dissolve the caramel and sugar in the water, and when the temperature is reduced to 70° F. add the yeast, and at the end of six hours the essences in which the saccharin has been dissolved. Continue the fermentation overnight, strain, and bottle.

II

Tincture of chiretta .	℥iij.
Tincture of hops . .	℥iv.
Essence of pineapple .	ʒss.

Mix.

From 1 to 2 dr. of this essence is to be added to each gallon of the brew. Two ounces of soluble essence of ginger may be added to the above formula if a pungent drink is required.

For Hop-stout add ½ oz. of caramel and the same of liquorice-juice to each gallon of brew.

Herb or Botanic Beer is now largely a home-brewed article, and all that the public want from chemists for it is a herb-beer extract. Subjoined are two reliable recipes. We purposely withhold several others made from the crude drugs, the manipulation of which is far too tedious for retailers :—

I

Extract of chamomile	℥iij.
Extract of dandelion	℥iv.
Extract of gentian	℥iv.
Extract of horehound	℥ij.
Extract of liquorice	℥viij.
Hop-ale essence	℥iij.
Salicylic acid	℈iv.
Glucose syrup	Oiv.
Caramel	℥xij.
Water to	Oviij.

Boil 2 pints of distilled water and add to it all the extracts except the chamomile, stir, and continue the heat until dissolved ; then remove from the fire, add the extract of chamomile and salicylic acid, dissolve, and cover the solution until cold. Strain through twill, add the syrup and caramel, make up to a gallon with water, set aside for several days and decant.

II

Ext. lupuli	ʒij.
Ext. chamomillæ	℥ss.
Ext. taraxaci	℥j.
Aq.	℥viij.

Rub down the extracts with the water, add boric acid ʒij., and bring the solution to the boil. Close the vessel until cold, strain, and add

Dec. sarsæ co. conc.	℥iij.
Sacch. ust.	℥ij.

Then dissolve

Ol. gaultheriæ	♏vj.
Ol. cinnamomi	♏v.
Gingerini	♏x.
S.V.R.	℥j.

Add to the mixture, and make up to 20 fl. oz. with treacle.

Four-ounce bottles of herb extract generally retail at 6*d.*

HERB BEER EXTRACT.

For making a most delicious

TEMPERANCE BEVERAGE.

TONIC, REFRESHING, AND NON-INTOXICATING.

It is prepared from Herbs known for their Purifying and Strengthening Properties, viz. Hops, Dandelion, Chamomile, Queen of the Meadow, Sarsaparilla, Horehound, and other agreeable tonic herbs.

Directions for Use.—Add two tablespoonfuls of the EXTRACT to 1½ lb. of loaf-sugar (more or less according to taste), pour over them 1 gal. of boiling water and stir until dissolved ; then add 1 gal. of cold water and two tablespoonfuls of brewer's barm, or ½ oz. of German yeast ; let it stand in a warm place for six hours, strain through flannel, and bottle. It is ready for use in a day or two, and should be kept in a cool place.

Horehound Beer

Horehound	lb. j.
Ginger	℥iv.
Water	Cong. v.

Infuse for four hours and strain. In the infusion dissolve

Sugar	lb. vj.
Liquorice-juice	lb. j.

Make up to 10 gals. with water, and add

Oil of peppermint	♏vj.
Oil of lemon	ʒj.
Essence of jargonelle pear	ʒij.
Rectified spirit	℥j.
Tincture of capsicum	℥ss.

Place in a suitable vessel, add 10 oz. of brewer's yeast, allow to ferment twenty-four hours, strain, and bottle.

Brown Robin

Bruised cassia	℥j.
Cream of tartar	℥ij.
Table-salt	ʒij.
Water	Oj.

Boil all together for ten minutes, and transfer to a cask containing

Sugar	lb. vj.
Brewer's yeast	Oss.
Water to make	Cong. viij.

Allow to stand sixteen to twenty-four hours (according to season), pour off into a suitable vessel containing the perfume, and bottle.

A suitable perfuming mixture is

Ol. menth. pip.	ʒj.
Ol. cassiæ	ʒss.
Ol. caryoph.	ʒj.
Spt. vini rect. ad	℥j.

Sarsaparilla-beer Extract

Dec. sarsæ co. conc.	℥viij.
Tr. chiratæ	℥ss.
Saffrol (or ol. sassafras)	♏xx.
Ol. cassiæ	♏xv.
Spt. rectificat.	℥ss.
Sacch. ust.	℥iij.
Syr. glucos. ad	℥xx.

Dissolve the saffrol and oil in the spirit, mix with the tincture, and add to the decoction; then add the caramel and syrup.

Spruce-beer Extract

Essence of spruce	℥iij.
Sol. essence of ginger	℥ij.
Conc. decoction of sarsaparilla	℥j.
Essence of pimento (1–20)	℥j.
Caramel to	Oj.

Mix.

In each of these cases two tablespoonfuls makes 3 gals. of beer.

Root-beer Extract

Root-beer is an American drink, equivalent to our herb-beer, but differing in flavour, as the following formula shows:—

Sassafras, yellow dock, pimento, wintergreen, of each	℥j.
Wild-cherry bark, coriander, hops, of each	℥ss.

Bruise and macerate six hours in

Proof spirit	℥vj.

Pack in a percolator and add another 2 oz. of menstruum. When dropping ceases pour on a few ounces of water. Collect the first 6 oz. of percolate, and reserve; continue percolation with a pint of water, evaporate the percolate to 4 oz., and add to the first 6 oz.

Treacle-beer

Tincture of hops	℥ss.
Sol. essence of ginger	℥j.
Treacle	lb. j.
Demerara sugar	lb. j.
Boiling water	Cong. ij.
Brewer's yeast	℥j.

Dissolve the treacle and sugar in the water; when cold add the flavour and the yeast, ferment four hours, strain, and bottle.

Essence of Spruce is made by dissolving 1 dr. of English oil of juniper in 3 oz. of rectified spirit and adding gradually with shaking 2 oz. of caramel.

Alcohol Determination.—To determine the amount of alcohol in herb-beer or similar preparations, take 10 oz. of the sample and distil 5 oz.; make up this distillate to 10 oz. with distilled water and take the specific gravity of the mixture at 60° F. Then compare with an alcohol table, where the percentages of proof spirit and alcohol are given opposite the different specific gravities, *e.g.* :—

Sp. gr.	Proof Spt. p.c.	Sp. gr.	Proof Spt. p.c.
0·9959	5·0	0·9978	2·6
0·9966	4·0	0·9982	2·0
0·9970	3·5	0·9987	1·5
0·9975	3·0	0·9991	1·0

The simplest and best apparatus for distillation is a glass retort and Liebig's condenser; but if these are not at hand an apparatus may be extemporised from a quart tin can. Fit this with a good cork, bored to receive a glass tube of $\frac{1}{4}$-inch bore and $2\frac{1}{2}$ feet long. Bend the tube to an acute angle 4 inches from one end by heating in an ordinary gas flame with constant turning. This tube must go through a condenser; any tin box, such as a biscuit-box or castor-oil tin, will do if two holes can be neatly made in it at opposite sides to suit the angle at which the tube dips. Put suitable corks into the holes, so that the water does not leak out, and through the corks pass the tube. Fill up the tin with cold water, and the apparatus is ready for distillation.

Galazyme, or Artificial Koumiss, may conveniently be referred to here, as it is an alcoholic non-excisable liquor prepared by fermentation. The best method of making it that we have tried is that suggested by Mr. Adam Gibson, whose formula is :—

Skimmed cow's milk	Oviiss.
Water	Oiiss.
Brewer's yeast	℥j.
Loaf-sugar	℥iij.
Milk-sugar	℥v.

Dissolve the loaf-sugar in 20 oz. of water and mix with it 75 oz. of the milk ; add the yeast, stir, and set aside in a warm place (75° to 80° F.) for six hours, or until small bubbles appear on the surface. Then dissolve the milk-sugar in the rest of the water and add it, along with the rest of the milk, to the brew. Mix, strain, and bottle, tying the corks well down.

Artificial koumiss is used as a remedy and food in cases of obstinate vomiting, diarrhœa, and debility. When prepared as above directed it is a worthy representative of kefir koumiss, and contains about 2 per cent. of proof spirit. It should be put up in Apollinaris-water bottles, and kept in a cool place for six days, shaking occasionally. By this time it will have become a pleasant foaming beverage, with a slightly acid taste. After this it becomes gradually unfit as a beverage for healthy persons, but up till the thirtieth day it is a valuable medicinal agent, though not so pleasant to drink. The galazyme may be ripened in two or three days by keeping the bottles at a temperature of about 70° F.

CORDIALS

The preparation of these liquors trenches upon fiscal ground, as any of them which contain more than the permitted 3 per cent. of proof spirit may not be sold retail without a licence, nor may such preparations as soluble essences be made for sale by wholesale without a compounder's licence. This observation is introduced here as a caution, so that those who are not posted on the matter may satisfy themselves as to the legality of their proceedings before beginning.

For chemists' retail the non-excisable representatives of the 'sweets' type (anise, peppermint, &c.) should be made, and when neatly put up in white-glass syrup-bottles, nicely capsuled and suitably labelled, no stock article makes the counter-case look brighter in the winter or sells itself more quickly. A fine peppermint cordial without any appreciable amount of alcohol is obtained by dissolving a small quantity of menthol in rectified spirit and adding syrup until the required strength is obtained. A little menthol goes a very long way. A handsome clove cordial is obtained by digesting bruised cloves in syrup until a ruby red colour is produced, and then adding a small quantity of ol. caryoph. dissolved in S.V.R. ; but for strict practice the following formulas should be adopted to ensure uniformity.

Anise Cordial

Ol. anisi	ʒiss.
Spt. rectificat.	℥iij.
Mag. carb. levis	ʒiij.
Aq. ad	Oiv.

Dissolve the oil in the spirit and pour into the water previously mixed with the magnesia, shake occasionally, and in four hours filter. Then place in a large funnel over two layers of twilled cotton 6 in. square

Sacch. alb.	lb. iv.

Percolate the filtrate through this until the whole of the sugar is dissolved, and make up to 1 gal. with B.P. syrup.

In a similar manner are made

Cinnamon Cordial, with ʒij. caramel per gallon.

Clove Cordial, with ʒij. caramel per gallon.

Peppermint Cordial, which should be tinted slightly green with chlorophyll.

The essential oils are used in each case, and in the same proportion as anise.

Another Cinnamon Cordial

(*Used as a Harvest Drink*)

Essence of cassia (1 in 7)	ʒj.
Tincture of capsicum	ʒj.

Pour upon

Sugar	lb. iv.

And dissolve in

Water	Cong. j.

Ginger Cordial

(*Non-excisable*)

Soluble essence of ginger	℥ij.
Tincture of capsicum	ʒj.
Tincture of cloves	ʒj.
Tincture of cinnamon	ʒij.
Caramel	ʒiss.
B.P. syrup	Ovss.
Water to	Cong. j.

Mix.

(*Excisable*)

Ginger (bruised)	℥viij.
Rectified spirit	Oj.
Water	Oj.

Percolate and continue percolation with

Sherry	Oij.

To the percolate add

Caramel	℥ij.
Thin syrup	Oxij.

Mix.

Lime-juice Cordial

I

Glucose syrup	8 gals.
Cane-sugar	108 lbs.
Water	20 gals.
Lime-juice	18 gals.
Oil of orange	ʒiv.
Oil of nutmeg	ʒiv.
Salicylic acid	℥ij.
Rectified spirit	℥x.

Dissolve the sugar in the water by heat, add the lime-juice and glucose syrup. Dissolve the oils and the acid in the spirit, mix with the cordial, and filter through a felt bag.

II

Boric acid	ʒij.
Citric acid	℥ij.
Sugar	lb. iij.
Water	Oij.

Dissolve by the aid of heat. When cold add

Lime-juice	℥xxx.
Tincture of lemon	℥ij.
Water to	Cong. j.

Caramel to colour.

Rum Shrub

(*Excisable*)

Fresh orange-juice	Oiv.
Sugar	lb. viij.

Clarify the juice by filtration

and dissolve the sugar in it. When cold add

Rum	Cong. iss.

Fine with 1 dr. of isinglass softened with water.

Lemon Squash

Sugar	lb. ij.
Citric acid . . .	℥j.
Water	℥xxviij.

Dissolve and add the following, previously prepared :—

Salicylic acid . . .	ʒss.
Oil of lemon . . .	ʒss.
Tincture of lemon-peel .	℥j.
Tincture of turmeric .	ʒss.
Caramel	♏xx.

Shake up the tincture of lemon with the oil now and then during four hours ; allow the oil to separate, decant the tincture from it, mix the tincture with the other ingredients, and filter.

Artificial Lemon-Juice

Citric acid . .	ʒix. gr. xxvj.
Distilled water . .	℥xv.

Dissolve and add

Oil of lemon . . .	♏ij.
S.V.R.	ʒij.

Mix.

Tincture of lemon-peel gives a better flavour. Each ounce of this contains 36 gr. of citric acid.

Orange Cordial

Sugar	lb. ij.
Water	℥xxvj.

Dissolve by heat and add

Orangeade essence . .	℥j.
Citric acid . . .	℥ss.
Orange-flower water .	℥iij.
Caramel	ʒj.

Previously mixed and filtered.

WINE ESSENCES

The trade which chemists do in essences for producing home-made wines is considerable, and though much of the essences comes from skilled manufacturers, many retailers put up their own preparations. The compounding of the essences was carried on without restriction until 1893, when the Excise authorities commenced to warn chemists against compounding any essence containing more than 3 per cent. of proof spirit without a compounder's licence, or selling such essence without a spirit-licence. This warning applied particularly to ginger-wine essence, and it led to considerable disturbance in the trade and correspondence with the Board of Inland Revenue, which ultimately resulted in the Board informing a correspondent (*C. & D.*, June 17, 1893, page 838) that they 'would not interfere with the manufacture and sale of ginger-wine or raspberry-wine essences without licence when intended for temperance and summer beverages, on condition that the percentage of vegetable acid (tartaric and citric) is not less than the percentage of proof spirit contained in the mixture.'

Subsequently (*C. & D.*, July 22, 1893, page 128) this permission was extended to *any* essence. The first of the three following formulas for ginger-wine essence contains double the percentage of proof spirit that there is of acid, so it cannot be compounded or sold without licence. But it may be made passable by omitting the tincture of capsicum, using instead of it 5 or 6 drops of capsicin, which should be dissolved in the tincture of ginger. The other formulas involve no risk.

Ginger-wine Essence

I

Tincture of ginger (1 to 4)	ʒiv.
Tincture of capsicum .	ʒiij.
Tartaric acid . . .	ʒvj.
Caramel	ʒij.
Water to	℥iv.

Mix.

Directions for Use.—Boil 4 lbs. of loaf-sugar in 5 wine-quarts of water (125 oz.), strain through cotton, and when cold add the above quantity of essence. Shake well and bottle.

II

Gingerin	℈j.
Capsicin	gr. vj.
Rectified spirit . .	ʒij.
Glycerine . . .	℥iss.
Caramel	℥ij.
Tartaric acid . . .	℥ss.
Syrup	℥iij.
Orange-flower water to .	℥x.

Put the capsicin and gingerin in a mortar and triturate with the spirit; then stir in the glycerine, next the caramel and syrup. Dissolve the acid in the orange-flower water (previously brought to the boil), and finally add this solution to the mixture.

To be put up in 4-oz. bottles, the contents of which, with 2 lbs. of sugar and 2 winebottlefuls of water, will make ginger-wine.

III

Gingerin. . . .	gr. xxxvj.
Capsicin. . . .	gr. ij.
Spt. rectificat. . .	℥iv.
Aq.	℥iv.

Dissolve the gingerin and capsicin in the spirit and the water, filter, and add to the following solution:—

Acid. tartaric. . . .	℥viij.
Sacch. ust. . . .	Oj.
Aq.	℥vij.

Mix.

This also is non-excisable. Two ounces of it are used to make cordial in the same manner as No. II.

For all the following formulas the same Thin Syrup is to be used—viz., 5 lbs. of sugar to 1 gal. of water. This is most conveniently expressed on labels as 'Dissolve 2 lbs. of loaf-sugar in two winebottlefuls of water by heating, skim off the scum, and when the syrup is cold add the contents of this bottle.' Under each of the formulas the quantity to bottle is indicated; and if more for the money is wanted the retailer must add a sufficiency of simple syrup.

Black-currant Wine Essence

Essence of black currant	℥viij.
Vanillin	gr. iv.
Gingerin	gr. v.
Tartaric acid	℥iiss.
Caramel	℥ij.
Salicylic acid	℈ss.
Water	℥iij.
Syrup to	℥xvj.

Triturate the salicylic acid, vanillin, and gingerin with the essence gradually added. Dissolve the tartaric acid in the water, add the caramel and the essence mixture, and make up to 16 oz. with syrup. Set aside for a few days and decant. [℥ij.]

Cherry-wine Essence

Essence of cherry	℥viij.
Essence of almonds	ʒij.
Vanillin	gr. iv.
Salicylic acid	℈j.
Tartaric acid	℥ij.
Cochineal colouring	℥j.
Caramel	℥j.
Water	℥iij.
Syrup to	℥xvj.

Prepare like the preceding essence. [℥ij.]

Damson-wine Essence

The same as cherry, but with essence of damson ℥viij.

Orange-wine Essence

Oil of sweet orange	♏xv.
Essence of vanilla	ʒij.
Tincture of orange	℥iss.
Tincture of lemon	℥ss.
Tartaric acid	ʒij.
Salicylic acid	ʒss.
Orange-flower water	℥ij.
Caramel	℥iij.
Syrup to	℥xvj.

Prepare as before directed. [℥ij.]

Raspberry-wine Essence

Essence of raspberry	℥j.
Tincture of capsicum	ʒj.
Liquid cochineal	ʒiij.
Acetic acid, B.P., to	℥iv.

Mix. [℥ij.]

A fair essence for the above formula may be made by macerating 4 oz. of bruised orris-root in a mixture of 10 oz. of S.V.R. and 6 oz. of water for seven days. Filter, and colour with caramel.

Red-currant Wine Essence

Prepare in the same way as the black-currant, but with essence of red currant and liquid cochineal instead of caramel. [℥ij.]

Other Essences

The cherry essence is a good standard to go by for other fruit-wine essences, using cochineal or caramel, or both, for colouring according to the nature of the wine.

MEDICATED AND MEDICINAL WINES

The preparation of medicated wines is not subjected to fiscal supervision, but the Inland Revenue authorities do not permit such preparations to be sold by retail without a licence unless they contain certain proportions of active ingredients; for example, official quinine wine containing 1 gr. of quinine sulphate in the fluid ounce, and coca wine containing ½ gr. of cocaine with a proportionate amount of extractive in each ounce, are considered to be medicinal and saleable without a wine-licence. Generally it may be said that the authorities do not regard as medicinal wine any which is not rendered unpalatable as a beverage.

So far as the manufacture of these wines is concerned, the chief point to note is that port and sherry wines, which are in a majority of cases used for making them, contain free tannic acid, and as tannin precipitates many active principles it is desirable to avoid it or get rid of it. Sherry and orange wines are not so objectionable when detannated. This is done (B.P.C.) by macerating $\frac{1}{4}$ oz. of finely-cut gelatine in a gallon of the wine for fourteen days, shaking daily, and at the end of the period decanting. Another method is to dissolve 1 dr. of white gelatine in 10 dr. of water, and add to a gallon of sherry. Set aside for a week and filter. The objection to the latter method is that some of the gelatine remains in solution. This cannot be done with red wines, because the treatment removes the colour, and in this case new port, Tarragona port, or Malaga should be used. A good quality of port, admirably suitable for the purpose, can be obtained at from 6*s.* to 8*s.* per gallon. In the subjoined formulas where 'port wine' is prescribed Tarragona, true port, or Malaga wine may be used.

Beef and Malt Wine

Extract of beef	℥iv.
Extract of malt	℥viij.
Port wine	Cong. j.

Rub down the extracts with a pint of the wine and add to the rest. Shake, set aside for fourteen days, decant, and filter the sediment.

Beef and Iron Wine

Extract of beef	℥iv.
Ammonio-citrate of iron	ʒv. ℈j.
Port wine	Cong. j.

Proceed as in making beef and malt wine, but dissolve the citrate in 2 oz. of warm water, and add the solution to the wine.

American Beef, Iron, and Wine

Ammonio-citrate of iron	℥iiiss.
Water	℥xx.
Aromatic elixir	Cong. j.
Extract of meat	℥iv.
Marsala to	Cong. v.

Dissolve, and let stand in demijohn exposed to light, shaking occasionally for seven days; filter through charcoal.

The best way to make these wines non-excisable is to add 1 gr. of quinine sulphate and $\frac{1}{2}$ gr. of citric acid to each ounce. The wines may also be made with detannated sherry or Malaga, but not with claret or Burgundy, as the latter rapidly become sour when exposed to the air.

Cassis Cordial or Wine

(Green)

Fresh black-currant leaves	℥vj.
Rectified spirit . .	℥xxxv.
Water	℥xxxv.
Sugar	℥xxxv.
Orange-flower water .	℥j.

Macerate the leaves in the spirit for four days, press, and wash the marc with 17 oz. of water. Dissolve the sugar in 18 oz. of water and the orange-water; add the other liquids and filter.

(Red)

Black currants (withered on the bush) . .	1 pint
Brandy	4 pints
Sugar	2 lbs.
Water or wine . .	2 pints

Macerate the berries in the brandy for a week, dissolve the sugar in the water (or wine), add to the tincture, set aside for a week or two, and decant or filter.

Cascara Sagrada Wine

Ext. cascaræ liq. misc. .	℥iss.
Sacchar. alb. . . .	℥iss.
Vin. xeric. detannat. ad .	℥xxx.

Mix, set aside for a week, and filter.

Dose : ℥ss. to ℥j. for adults.

Cinchona Wine.

Ext. cinchonæ liquid. .	℥ij.
Vin. xeric. detann. ad .	Cong. j.

Mix, set aside for three weeks, and filter.

May also be made with port wine. For non-excisable wine add 1 oz. of the liquid extract to each pint of wine and rack for a month before filtering.

Coca Wine

(Excisable)

Coca-leaves . . .	lb. ij.
Port wine . .	Cong. iv.

Macerate for a month, shaking daily; then decant into clean jars, and set aside for at least another month. Again decant and filter the 'foots' through French grey filtering-paper.

This is the common plan for making excisable coca wine. Standardised fluid extract of coca (miscible) may also be used in the proportion of 2 oz. (or more) to the gallon. It is important to use a new port—best quality Tarragona or Malaga wine.

(Non-excisable ; ℥j. = cocaine, gr. ss.)

Ext. cocæ liq. . .	℥viij.
Cocain. hydrochlor. .	℥j.
Vin. rub. ad . . .	Cong. j.

Mix, set aside for four weeks, and filter.

American Coca Wine

Claret	Cong. j.
Rectified spirit . .	℥xvj.
White sugar . . .	lb. j.
Fluid extract of coca .	℥iv.
Tincture of cudbear .	to colour

Add the spirit to the claret, to fortify it, as soon as it is opened ; mix with the other ingredients, shake occasionally for seven days, and filter through charcoal.

Fruit Wines

Black-currant, raspberry, strawberry, and similar wines are made as follows :—

From the ripe berries contained in a twill bag press out the juice, and to every quart of it add 2 quarts of water with 2 lbs. of sugar and 3 dr. of tartaric acid dissolved in it. To every quart of the liquid add 1 dr. of the best compressed yeast. The liquid should be put into a clean barrel filled to the bung-hole, which should be large and closed simply by a flap of canvas. Keep at a moderate but even temperature (say, 60°-65° F.)

for six weeks, and then draw off into another vessel, and keep it there for from six to eight weeks longer, when it will be ready for bottling.

Ginger Wine

Loaf-sugar . . .	lb. xviij.
Water	Cong. vj.
Rinds of 7 lemons	
Rinds of 2 Seville oranges	
Bruised ginger . .	℥viij.
Raisins . . .	℥iv.

Boil for an hour, skim carefully, and pour into a suitable non-metallic vessel. Next day add the juice of the lemons and oranges and 1 oz. of isinglass ; strain and add 2 tablespoonfuls of yeast. Ferment three days and close the vessel (a cask preferably, which may be bunged). Set aside for six weeks, strain into another cask, and four weeks later the wine will be ready for bottling. A pint of brandy is sometimes added.

Orange Wine

(Unfermented)

Oil of orange . .	ʒj.
Tincture of orange .	℥viij.
Rectified spirit . .	℥iv.
Tartaric acid . .	℥viij.
Salicylic acid . .	ʒiij.
Loaf-sugar . .	lb. vj.
Caramel . . .	℥iij.
Water . . .	Cong. viij.

Dissolve the oil of orange in the spirit, and pour upon the sugar contained in a large funnel. Pass through this a sufficiency of the water to dissolve, add the rest of the water containing the tartaric acid, then the caramel, and finally the tincture containing the salicylic acid. Set aside for a fortnight and filter if necessary.

(Fermented)

Loaf sugar . . .	lb. xxiij.
Water	Cong. x.

Dissolve by boiling and skim carefully. Pour the boiling syrup upon the rinds of 100 oranges, add the juice of the fruit, and allow to stand overnight. Add 6 oz. of yeast, ferment three days at a temperature of 65° to 70° F., then strain into a barrel and bung loosely. Add 2½ pints of brandy and rack for four months, when the wine is ready for bottling. Less brandy may be used, in which case 5 gr. of salicylic acid per pint should be added.

Kola Wine

Fresh kola nuts, bruised	℥vj.
Port or sherry . .	Cong. j.

Macerate for a week and filter.

May also be made from dried and roasted nuts, the resulting preparation having a finer flavour. A little true cinnamon and vanilla further improve it.

Pepsin Wine.—Many formulas for this preparation do not recognise the fact that the pepsin requires to be treated with a dilute acid previous to being treated with the menstruum ; and, further, that the menstruum should not contain more than 10 per cent. of alcohol, as an excessive amount of alcohol precipitates pepsin. Only the best quality of pepsin should be used, preferably scale pepsin. The powder pepsins generally contain insoluble matter. Glycerine of pepsin may be used in proportionate quantity. Use also detannated sherry.

I

Pepsin porci . . .	gr. 160
Acid. hydrochlor. dil. .	♏ 160

Dilute the acid to 1 oz. with water, and pour on the pepsin in a 24-oz. bottle; allow to remain so for an hour, then add

Glycerin. . . .	℥ij.
Aquæ	℥vij.

Macerate for two days, filter, and add sherry 10 oz., bringing up the colour with browning.

II

Soluble scale pepsin .	ʒv. ℈j.
Distilled water . .	℥iij.
Glycerine . . .	℥ij.
Strong hydrochloric acid	ʒij.
Detannated sherry, B.P.C., to . . .	Oj.

Mix together the acid and the water, and dissolve the pepsin in the mixture; then add the glycerine and the sherry, and after three days filter.

The first formula was published in *The Chemists' and Druggists' Diary*, 1884, and makes an excellent wine. In 1890 the Inland Revenue authorities prohibited the sale of pepsin wine without a licence unless it contains 320 gr. of pepsin and 120 minims of strong hydrochloric acid in each pint. As a result of that Mr. James Clark, in 1892, constructed the second formula, which is substantially a modification of the first. The use of detannated sherry was recommended in *The Chemist and Druggist* three years earlier.

Senna Wine

Alexandrian senna . .	℥iij.
Sherry	℥xxxv.

Macerate a week, press, and strain. To the strained liquor add gelatine 5 gr. dissolved in water ʒiiss.; then the following:—

Tincture of orange . .	℥j.
Tincture of ginger . .	℥ss.
Aromatic tincture . .	ʒiss.
Honey	℥ij.

Allow to stand eight days and filter.

Excellent for hæmorrhoids. Dose: ℥ss. to ℥j. or more.

Quinine Wine

(The original formula of Dr. G. F. Collier)

Quinine sulphate . .	gr. xxiv.
Lemon-juice (or sol. acid. citric. ℥iss. to Oj.) .	ʒiij.
Orange wine. . .	℥xxv.

Mix.

An excellent wine for preprandial use may also be made with sherry and quinine hydrochloride in the foregoing proportions.

Vino Vermouth

(The genuine formula according to the French Academy)

Wormwood . .	℥iv.
Gentian . . .	℥ij.
Angelica-root . .	℥ij.
Blessed thistle . .	℥iv.
Calamus aromaticus .	℥iv.
Elecampane-root . .	℥iv.
Centaury-leaves . .	℥iv.
Germander-leaves .	℥iv.
Nutmegs . . .	No. xv.
Oranges, sliced . .	No. vj.
Rectified spirit . .	Oix.
Sweet white wine .	Cong. xx.

Macerate fifteen days and filter.

This may be made into a liqueur by adding 25 per cent. of sugar.

Medicated-wine Essences.—Many chemists object to taking out an 'off' wine-licence, or their businesses may not be of dimensions to warrant this addition to their expenses. To such the selling of essences for compounding the various wines can be made a 'profitable extra,' and save the turning away of customers. It should also be borne in mind that there are a good many people who prefer to make their own medicated wines.

Coca-wine Essence

Ext. cocæ liq. (miscible) .	℥vij.
Spt. æther. nit. . .	♏lxxx.
Glycerini Aquæ } part. æq. ad .	℥x.

M.

The quantity of coca extract to use in this formula has been worked out for a liquid extract containing 0·25 per cent. of cocaine. There are extracts on the market containing double this quantity of cocaine. It is obvious that only half the quantity of such an extract should be used in above formula.

Put up in 1-oz. panel-flats, to sell for 1*s*., and label as follows:—

CONCENTRATED

ESSENCE OF COCA

(*Erythroxylon Coca*)

For making full-strength Coca Wine.

Directions.—Add the contents of this bottle to a pint of good-quality Tarragona or Port Wine.

Dose of the Coca Wine thus produced.—From a half to a whole wineglassful two or three times a day.

PREPARED BY

(Name and Address)

Kola-wine Essence

Miscible liquid extract of kola	℥vj.
Essence of pineapple . .	♏viij.
Glycerine and water, of each equal parts to .	℥viij.

M.

℥j. panel-flats sell for 1*s*.

Label: 'Concentrated Essence of Kola, from the seeds of *Sterculia acuminata*, for instantly producing kola wine.' (Directions as for coca essence.)

Cinchona-wine Essence

Ext. cinchon. liq., B.P. .	℥ij.
Glycerini . . .	℥iv.
Aq. ad	℥viij.

M.

℥j. panel-flats, 1*s*.

Label: 'Miscible Extract of Cinchona, prepared from the bark of *Cinchona Succirubra*, for making tonic cinchona wine.' (Directions as for coca essence.)

Beef and Iron Wine Essence

Liq. carnis . . .	℥vj.
Ferri ammon. cit. . .	℥j.
Aq. chloroformi ad . .	℥viij.

Dissolve the ferr. amm. cit. in the aq. chlorof. and mix with the liq. carnis.

℥j. panel-flats sell for 1*s*.

It should be noted that although the last formula produces a cloudy wine, it yields a product possessing superior nutritive qualities. 'Fluid beef' uncooked is to be used.

Label: 'Essence for producing Beef and Iron Wine, combining in one solution the nutritive and tonic properties of both beef and iron.' (Directions as for coca wine.)

Formulas for many other wine-essences may be constructed on similar lines to these—as, for instance, an essence for a 'Bitter Tonic Wine,' containing gentian and nux vomica, which might well be made a leading line in some districts.

Artificial-wine Essences.—The manufacture of these essences, which are for imparting the distinctive flavour of the respective wines and liquors to sweetened mixtures of spirit and water, has reached a high degree of skill, especially in Germany. The processes and formulas employed are well-guarded secrets, but the following formulas have been used by a manufacturer :—

Curaçao Essence

Oil of cassia	ʒj.
Oil of nutmeg	ʒj.
Butyric ether	ʒj.
Oil of bitter orange	ʒxj.
Rectified spirit to	℥x.

Mix.

Essence of Gin

Oil of juniper	℥j.
Oil of nutmeg	ʒj.
Oil of caraway	♏vj.
Fusel oil	♏x.
Rectified spirit	℥xvj.

Mix.

Essence of Hollands Gin

Fusel oil	℥iv.
Oil of juniper	℥v.
Rectified oil of turpentine	℥v.

Mix.

Essence of Port

Acetic ether	℥j.
Essence of grape	℥iv.
Essence of vanilla	℥iv.
Tincture of kino	℥iv.
Essence of raspberry	℥viij.

Mix.

Essence of Rum

Butyric ether	℥ij.
Acetic ether	ʒj.
Acetate of amyl	ʒiss.
Essence of vanilla	℥iss.
Tincture of orris	℥ij.
Rectified spirit	℥xiij.

Mix.

Essence of Sherry

Œnanthic ether	℥j.
Nitrous ether	℥ij.
Rectified spirit to	Oj.

Mix.

These essences may be used for making artificial-wine essences similar to those on page 248.

BITTERS AND LIQUEURS

Some liqueurs are still proprietary, although they may have originated generations since. This is the case, for example, with Chartreuse, regarding which *The Chemist and Druggist* received in September, 1895, an official intimation that 'the process of manufacture of the liqueur de la Gde. Chartreuse has never been divulged, and that the expression "Chartreuse" applies only to the products made by the Rev. Gabriel Alfred Grézier at La Grande Chartreuse, who is the procurator of the monastery of that name. Further, proceedings will be taken against any person who attempts to use the name of "Chartreuse" in respect of liqueur not manufactured at La Grande Chartreuse.' It is right, therefore, that we should explain here that we do not claim that Chartreuse is made according to any of the formulas subjoined, or that the original formulas of any of the proprietary preparations named are the same as those given here.

Absinthe

Oil of wormwood . .	ʒj.
Oil of anise . . .	♏xv.
Oil of coriander . .	♏xxiv.
Rectified spirit . .	Cong. j.

Dissolve and add a mixture of

Syrup	Oiss.
Water	Cong. ij.

Colour pale green with spinach or chlorophyll.

American Peach Bitters

Peach kernels or bitter almonds . . .	9 oz.
Angostura bark . .	4 oz.
Pale brandy or proof spirit . . .	1 gal.

Slice the peach kernels or almonds, &c., thin, and digest fourteen days. Strain and add

Sugar (white) . .	2 lbs.
Water	2 quarts

Dissolved.

If peach-juice is procurable, 2 quarts may be added instead of the water; but, if not, sufficient citric acid may be used, with a sufficiency of the artificial essence of peach.

Anisette

Oil of star anise . .	ʒv.
Oil of anise . .	ʒij.
Oil of fennel . .	♏xl.
Oil of coriander . .	♏vj.
Oil of sassafras . .	♏xx.
Tincture of orris .	℥j.
Rectified spirit . .	Cong. iiss.
Water . . .	Cong. iij.
Sugar . . .	lb. xx.

Dissolve the oils, &c., in the spirit, and the sugar in the water, and mix.

Anisette de Bordeaux

Star-anise . . .	lb. ij.
Coriander . . .	lb. j.
Fennel . . .	lb. j.
Rectified spirit . .	Cong. ij.
Water . . .	Oiv.

Macerate a week, filter, and to the filtrate add 10 lbs. of sugar and ess. amygd. amar. ʒij. dissolved in 3 pints of hot water.

Angostura Bitters

This celebrated liqueur was devised in 1832 by Surgeon-General J. H. B. Siegert, of Venezuela; and the fame of it was brought to Europe in 1839 by Von Humboldt, the explorer, who had been cured of seediness by some of it that he got from Dr. Siegert. The bitters are still made according to the original formula by Carlos D. Siegert & Brothers (sons of the originator), at Trinidad; but a similar article is made commonly in Europe, *e.g.* :—

I

Angostura-bark	℥iv.
Chamomile-flowers	℥j.
Cardamom-seeds	ʒij.
Cinnamon	ʒij.
Orange-peel	℥j.
Raisins	lb. j.
Rectified spirit	Ovj.
Water	Oxiv.

Macerate for a month, press, and filter.

II

Angostura-bark	℥iv.
Cinchona-bark	℥ij.
Bitter-orange peel	℥ij.
Galangal-root	ʒx.
Cinnamon	ʒx.
Cassia-buds	ʒx.
Red sandalwood	ʒx.
Cardamom-seeds	℥ss.
Gentian-root	ʒiij.
Proof spirit	Cong. j.
Rum	Cong. j.

Macerate for a week and in the filtrate dissolve

Sugar	lb. ij.
Oil of cognac	♏xx.

Mix.

The second is the better formula, the first being weak in respect to the absence of cinchona, which is an essential.

Benedictine

Dieterich gives the following lengthy formula for

Benedictine Essence

Cardamom-seeds, myrrh, and mace, of each	gr. xv.
Galangal-root, ginger, and orange-peel, of each	ʒiiss.
Extract of aloes	ʒj.
Rectified spirit	℥vj.
Water	℥iiss.

Macerate for a week, press, and filter. To the filtrate add

Golden syrup	ʒv.
Spirit of nitrous ether	℥viij.
Solution of ammonia	♏xv.
Vanillin sugar	gr. xv.
Liquorice-juice	ʒv.
Acetic ether	℥j.
Coumarin	gr. iss.
Oils of lemon and bitter orange, of each	ʒj.
Oil of anise	gtt. xv.
Oil of bitter almonds	gtt. xij.
Oil of sassafras	gtt. vij.
Oil of hyssop	gtt. iv.
Oil of hops	gtt. ij.
Oil of wormwood	♏xl.
Oil of ginger	♏xv.
Oil of cascarilla	gtt. xv.
Oil of millefoil	gtt. x.
Oil of angelica	gtt. vj.
Oil of cardamoms	gtt. ij.
Oils of juniper and rosemary, of each	gtt. j.

Bring up the volume to 17½ oz. by the addition of rectified spirit. The essence should be matured for two years before being used for the following

Liqueur

Benedictine essence	℥j.
Rectified spirit	℥xxiv.
Sugar	℥xxij.
Water	℥xx.

Dissolve the sugar in the water, and to the syrup add the essence, previously mixed with the spirit.

Bitters.—Under this name various preparations are required, but here we note those only which are used to add to wines or spirits or for pick-me-ups. The species are sometimes wanted by publicans, who make the tincture themselves. The first two formulas are for this purpose, and we can particularly commend the first of these.

I

Rad. gentianæ . .	℥xvj.
Sem. coriandri . .	℥xvj.
Rad. calam. arom. . .	℥iv.
Rad. sassafras . . .	℥iv.
Sem. carui . . .	℥iv.
Cort. cassiæ . . .	℥iv.
Caryophylli . . .	℥ij.
Aloes capensis . .	℥j.

Sufficient for 20 gals. of whisky.

II

Cusparia-bark . . .	℥j.
Gentian-root . . .	℥ij.
Cascarilla and orange-peel, of each . . .	℥j.
The peel of six fresh lemons	
Cardamom-seeds . .	℥ss.
Cinnamon, caraway, and cloves, of each . .	ʒij.
Ginger	℥j.
Socotrine aloes . .	ʒj.
Carbonate of potash .	gr. x.
Raisins	lb. j.
Rectified spirit . .	Oiij.
Water	Ov.

Reserve an ounce of water, and in this dissolve the aloes and potash; add to the rest of the ingredients and macerate fourteen days; press and filter, and make up to 1 gal. with sherry.

If the dry ingredients are to be sold, direct them to be macerated in 1 gal. of 10 u.p. whisky.

Wormwood Bitters

Wormwood . . .	℥viij.
Juniper-berries . .	℥ij.
Cinnamon . . .	℥j.
Coriander . . .	℥j.
Rectified spirit . .	Oj.
Water	Oiij.

Macerate for a week and filter.

Liqueur Bitters

Quininæ sulph. . .	gr. xxiv.
Liq. strychninæ . .	ʒj.
Tr. limonis . . .	ʒiij.
Tr. aurant. recent. . .	ʒiij.
Tr. croci . .	ʒj.
Spt. rectificat. . .	℥ij.
Syrup. et aquæ āā q.s. ad	℥vj.

Dissolve the quinine in the spirit with acid. sulph. dil. q.s. and add the other ingredients.

This sells in liqueur squares at 2*s.* 6*d.* Dose: ℥ss. taken neat.

Orange Bitters

I

Orange-peel . . .	℥j.
Preserved citron-peel, gentian, and cascarilla, of each	℥ss.
Rectified spirit . .	℥v.
Water	℥xv.

Macerate for a week and filter.

II

Gentian	℥ss.
Chiretta, cusparia, ginger, and fresh lemon-peel, of each	ʒij.
Orange-wine . . .	℥xxxij.

Macerate ten days and filter.

Pick-me-up Bitters

Spirit of chloroform .	℥ij.
Aromatic spirit of ammonia	℥v.
Tincture of cascarilla .	℥v.
Glycerine . . .	℥v.
Comp. tincture of gentian to	℥xxx.

Dose: 1 to 4 dr.

Carmel Monks' Liqueur

Angelica-root	℥iij.
Aniseed	℥xj.
Lemon-peel	ʒvj.
Coriander-seed	℥x.
Nutmeg	℥viij.
Fresh marjoram leaves and flowers	℥vj.
Fresh melissa-leaves	℥ 50
Cloves	℥x.
Fresh sage leaves and flowers	℥xiv.
Fresh thyme	℥vj.
Fresh hyssop	℥vij.
Cinnamon	℥x.
Proof spirit	Cong. xiij.

Macerate for three days, then distil 10 gals., and to the distillate add 10 gals. of simple syrup (1 in 2).

Cocoa Liqueur

Caracas cocoa	℥xxiv.
Vanilla	ʒss.
Brandy	℥xxxij.

Macerate fourteen days, strain and press; treat the marc with

Warm water	℥xxxij.

When cold filter, and in the filtrate dissolve

Sugar	℥xxxvj.

Mix with the brandy.

Chartreuse.—We again call attention to the note on page 255 regarding the proprietary right to this title. The secret of the manufacture of this famous liqueur has been exceedingly well guarded by the monks who had their home at Grenoble, whence they removed to Romont, Switzerland, in 1880, owing to the action of the French Government. The peculiar flavour of the liqueur was wont to be attributed to the rare herbs which grew around the monastery, and a few years since a Duren professor of botany thought he had discovered *the* herb whose flavour has eluded the nose and palate of every imitator, but the professor did not say what it was. The fact remains that those who have visited the monastery, and have been shown the distillery, have come away as wise as when they entered. One man who went there tells us that in the distillery 'great copper alembics were at work distilling the infusion of plants. On a shelf high above was a great basin full of syrup, which is a secret as much as the infusion itself. When ready the syrup and the infusion flow into the great casks that line the cellars. There are sixty of these casks, and each one holds about 3,000*l.* worth.' Here are some of the attempts which have been made to hit the composition of the liqueur, which, by the way, is made green, white, and yellow. There is also a medicinal elixir which differs in composition from the after-dinner liqueurs.

	Green	White	Yellow
Alpen artemisia	℥v.	℥iiss.	℥iiss.
Angelica-seeds	℥iiss.	℥iiss.	℥iiss.
Angelica-root	ʒx.	ʒv.	℥iiss.
Arnica-flowers	ʒiiss.	Calamus ʒv.	Arnica ʒiiss.
Poplar-buds	℥iij.	Cardamoms ʒv.	ʒv.
Chinese cassia	ʒiiss.	℥ij.	ʒiiss.
Hyssop	℥vj.	℥iiss.	℥iij.
Nutmeg	ʒiiss.	ʒiiss.	ʒiiss.
Lemon-scented melissa	℥x.	℥v.	℥v.
Peppermint	℥v.	Cloves ʒv.	ʒiiss.
Thyme	ʒv.	Tonka bean ʒiss.	Coriander ℥xxx.
Rectified spirit	Ox.	Ox.	Ox.
Water	Ov.	Ov.	Ov.
	Colour green		Aloes ℥ss.

In each case macerate for fourteen days, then press and filter or distil. The essence is sufficient for making 125 pints of liqueur with equal parts of syrup (1 in 2) and rectified spirit.

The following are simpler formulas :—

I

Oil of angelica	♏xx.
Oil of cajuput	♏ij.
Oil of calamus	♏j.
Oil of cloves	♏ij.
Oil of coriander	♏ij.
Oil of hyssop	♏iij.
Oil of mace	♏iij.
Oil of melissa	♏iij.
Sugar	℥v.
Rectified spirit	Oj.
Water	℥x.

Dissolve the oils in the spirit and the sugar in the water, mix, and colour yellow with tincture of saffron or green with chlorophyll.

II

Oil of melissa	♏vj.
Oil of angelica	ʒss.
Oil of cloves	♏vj.
Oil of peppermint	♏xl.
Oil of hyssop	♏vj.
Oil of nutmeg	♏vj.
Oil of cinnamon	♏vj.
Rectified spirit	Cong. j.
Sugar	lb. viij.
Water to	Cong. iiss.

Mix and colour yellow or green as desired.

For diabetic persons this and other liqueurs may be sweetened with saccharin in the proportion of 1 gr. to the ounce.

Cherry Brandy

Mash ripe cherries and press out the juice through a horsehair bag; set aside for a few hours to settle, and decant the clear liquor. To each quart of juice add 1 quart of brandy, a thick syrup of 12 oz. of sugar, and the rind of a lemon sliced. Set aside for two months and filter bright. Should not be used for twelve months. The cordial is also made by covering ripe black cherries, contained in a jar, with brandy.

Cheshire Cordial

Cinnamon and cloves, of each	ʒvj.
Nutmeg and ginger	℥j.
Candied lemon and citron	℥j.
Blanched sweet almonds	℥ij.
Blanched bitter almonds	℥ss.
Lemon-juice	℥j.
Calf's-feet jelly	℥vj.
Orange marmalade	℥ij.
Coriander and caraway seeds, of each	℥ss.
Damson jelly	lb. ij.
Proof spirit	Ovj.
Sherry	Oiij.

Beat the almonds together, add 3 oz. of sherry, and allow to stand overnight. Bruise the drugs, put into a jar with the rest of the solids, add the spirit, sherry, and almonds, and macerate for a month. Strain and fine with isinglass, or filter bright.

Crême de Panama

Lemon-peel	℥iiss.
Unripe-orange peel	ʒx.
Chocolate	ʒx.
Cinnamon	ʒv.
Vanilla	℥ss.
Saffron	ʒiss.
Rum	℥xxv.

Macerate for a week and strain. Reserve the rum, pack the marc in a percolator, and pass through 20 oz. of rectified spirit; mix the liquids, add rectified spirit 150 oz. and syrup (1 in 2) to 500 oz. Colour with caramel if desired.

Curaçao

I

Tincture of fresh orange-peel	℥j.
Tincture of Tangerine-orange peel	℥j.
Oil of orange	ʒij.
Rectified spirit	℥xij.
Water	℥x.
Syrup	℥viij.

Mix, and at the end of a few days filter.

II

Fresh orange-peel	℥xxx.
Tangerine-orange peel	℥xxx.
Mace	ʒij.
Vanilla	gr. xxiv.
Cinnamon	℥j.
Rectified spirit	Cong. ij.

Macerate for a week and filter. To the filtrate add

Jamaica rum	℥xxv.
Sugar	℔ xv.
Water	Cong. j.

Dissolve, add caramel to colour, and water to make the whole measure 50 pints.

Kola Liqueur

Kola, roasted and bruised	℥viij.
Cochineal, bruised	ʒss.
Arrack	℥iiiss.
Rectified spirit	Ovss.
Water	℥x.

Macerate for a week, filter, and add to a hot solution of

Sugar	lb. xvj.
Water	Ovj.

When cold add essence of bitter almonds (1–20) ʒj.

Kümmel

Oil of caraway	ʒij.
Oil of anise	♏x.
Oil of fennel	gtt. iij.
Oil of lemon	gtt. iij.
Oil of nutmeg	gtt. ij.
Brandy	Oj.
Rectified spirit	Oiv.
Sugar	lb. v.
Water to	Cong. j.

Prepare in the usual way.

Ginger Brandy

Jamaica ginger, well bruised	½ lb.
Strong brandy	1 gal.

Macerate fourteen days, shaking repeatedly, and strain through muslin. Boil the ginger gently for twenty minutes in a gallon of water and strain; add

Sugar . . . . 10 lbs.

Dissolve, and when cold add the brandy, and finings to clear.

Kirsch

Oil of cinnamon	gtt. iv.
Oil of cloves	gtt. ij.
Otto of rose	gtt. v.
Oil of bitter almonds	ʒj.
Rectified spirit	Oxxv.
Cherry syrup	lb. xl.
Water to	Olx.

Mix.

Maraschino

Essence

Ess. vanillæ	Oiij. ℥viij.
Ol. amygd. amar.	℥ij. ʒij.
Ess. pyri (pear)	ʒxiij.
Spt. rectif.	℥xxviij.

M.

Liqueur

Oil of bitter almonds	♏xv.
Essence of vanilla	ʒj.
Jasmine extrait	ʒij.
Raspberry essence	gtt. x.
Oil of neroli	gtt. x.
Oil of lemon	♏xv
Spirit of nitrous ether	ʒij.
Spirit	Ovj.
Sugar	lb. viij.
Rose-water	℥x.
Water to	Cong. ij.

Make a liqueur in the usual manner.

Sloe Gin

Sloes	lb. viij.
Sugar	lb. iv.
Gin	Cong. j.

Macerate for one to three months and strain.

HOUSEHOLD AND DOMESTIC REQUISITES

THIS chapter presents considerable difficulty of arrangement; strictly speaking, everything in the book is a household or domestic article, but we are now dealing with that special section of goods which are used in the kitchen, in the laundry, throughout the house for cleaning purposes, or generally in promoting domestic hygiene. For convenience in reference it is necessary to group these methodically; but we know of no rule to which we may conform, except it be that which guides all good housewives—'the way to a man's heart is by his stomach.' Observing which we at least touch solid ground, and if we commence with

SAUCES

we have an excellent precedent for success, as two of the most popular sauces are made by members of the drug-trade. It may be the ambition of many chemists to produce a relish which will acquire a big local reputation. There is every reason why chemists should make good sauces. These compounds are as delicate in the making as any Pharmacopœia article: their quality depends much upon the quality of the condiments used in making them and the nicety of the compounding, and if anything goes wrong a chemist is more likely to hit upon 'the why' and 'the wherefore' than anyone who has little knowledge of the properties of the ingredients.

Tomatoes are the basis of most of the thick sauces. The Channel Islands fruit is now obtainable at a cheap rate during the season, but if it cannot be obtained tinned tomatoes may be used.

To thicken sauces use tragacanth powder or starch in the proportion of ½ oz. to the gallon. Fermentation is a frequent source of trouble, and generally arises from the presence of micro-organisms in one or other of the ingredients of the sauces and imperfect boiling in the course of preparation. Sauces containing sugar or treacle are peculiarly liable to this trouble. The points to note, therefore, in such sauces are :—(1) Boil the whole of the ingredients for at least ten minutes ; (2) scald the vessels in which the sauce is to be stored or packed ; and (3) add to each gallon salicylic acid ʒss. dissolved in spirit.

Brighton Sauce

Garlic	℥iv.
Cayenne pepper . .	℥iss.
Mustard	℥iij.
Common salt . . .	℥iij.
Indian soy . . .	℥xxiv.
Mushroom ketchup . .	℥xxiv.
Beaufoy's acetic acid .	Oiss.
Water	Oxss.

Skin the garlic and bruise it with the salt ; add to the other ingredients, digest in a warm place for a week. Strain and bottle for use.

Browning Sauce

(For Soups, Gravies, Stews, &c.)

Granulated sugar . .	72 oz.

Liquefy in an iron vessel over a quick fire ; when brown add whilst hot

Water	32 oz.
Indian soy . . .	16 oz.
Walnut ketchup . .	3 oz.
Mushroom ketchup . .	3 oz.

Bottle for use.

Chop Relish

Black pepper . . .	℥j.
Allspice	ʒiv.
Salt	℥j.
Horseradish . . .	ʒiv.
Shallots	ʒiv.
Walnut ketchup . .	℥xx.

Steep for fourteen days and strain ; put it into small bottles, and cork well.

Chutney Sauce

Stoned raisins . . .	℥iv.
Sour or crab apples . .	℥viij.
Brown sugar . . .	℥iv.
Powdered ginger . .	℥ij.
Common salt . . .	℥ij.
Cayenne pepper . .	℥ij.
Garlic	℥j.
Vinegar . . .	a sufficiency

Pound the solid ingredients together in a mortar until the whole is reduced to a pulpy mass, then add enough vinegar to bring the whole to the consistence of cream, and bottle for use.

Epicurean Sauce

Anchovies . . .	℥xvj.
Shallots (peeled and sliced)	℥iv.
Horseradish (sliced) .	ʒij.
Pimento (bruised) . .	℥ij.
Black pepper (bruised) .	℥ij.
Curry powder . . .	℥j.
Cayenne pepper . .	℥j.
Garlic (peeled and sliced)	ʒvj.
Celery-seed (bruised) .	℥ss.
Essence of lemon . .	ʒiss.
Brown vinegar . .	℥viij.
Indian soy . . .	℥xvj.
Port wine . . .	Oiij.
Walnut ketchup . .	Oiij.
Mushroom ketchup . .	Ov.

Gently boil all the ingredients

except the vinegar for an hour; strain, add the vinegar, and bottle.

Favourite Relish

(For Roast Pork and Goose)

Green sage-leaves	℥ij.
Fresh lemon-peel	℥j.
Salt	℥j.
Minced shallots	℥j.
Cayenne	ʒss.
Citric acid	ʒss.
Claret	Oj.

Macerate fourteen days and strain.

Harvey's Sauce

Anchovies	℥viij.
Lemon-peel	℥j.
Shallots	℥j.
Pimento	℥j.
Horseradish	℥j.
Walnut pickle	Oj.
Mushroom ketchup	Oj.

Slice or bruise the solids and macerate in the liquids for a month; strain, and thicken with browning.

Herefordshire Sauce

Cayenne pepper	℥j.
Shallots (sliced)	℥ij.
Walnut pickle	Oj.
Indian soy	Oiss.
Mushroom ketchup	Oiv.
Vinegar to	Cong. j.

Macerate for a month and strain.

London Relish

Anchovies (mashed)	℥viij.
Fresh lemon-peel	℥ij.
Minced shallots	℥ij.
Scraped horseradish	℥ij.
Bruised pimento	℥j.
Black pepper	℥j.
Bruised celery-seed	ʒij.
Powdered capsicum	ʒij.
Walnut pickle	Oj.
Mushroom ketchup	Oij.

Macerate for a month and strain.

Imperial Sauce

Anchovies	32 oz.
Shallots (sliced)	8 oz.
Garlic (sliced)	8 oz.
Chillies (bruised)	8 oz.
Brown sugar	8 oz.
Horseradish (scraped)	16 oz.
Bay salt	16 oz.
Cloves (bruised)	3 oz.
Mace (bruised)	2 oz.
Cochineal (bruised)	1 oz.
Curry powder	1 oz.
Vinegar	2 gals.
Mushroom ketchup	1½ gal.
Walnut ketchup	1 gal.
Indian soy	½ gal.

Boil the whole together for twenty minutes and strain through flannel. Allow to settle, and bottle the clear sauce.

Lancashire Sauce

Table-salt	℥ij.
Bruised capsicum	℥ss.
Bruised pimento	℥ss.
Bruised cinnamon	ʒiij.
Bruised cloves	ʒij.
Bruised mace	ʒij.
Bruised coriander	ʒij.
Treacle	℔ ss.
Vinegar	Oiv.

Boil for half an hour, strain, and add

Indian soy	℥x.
Walnut ketchup	℥xv.

Keep in a warm place for a day and strain through a hair sieve.

Oyez Sauce

Garlic	℥vij.
Shallots	℥vij.
Capsicums	℥iv.
Mace	℥ij.
Cloves	℥ij.
Indian soy	Cong. ij.
Malt vinegar	Cong. vj.

Boil together for fifteen minutes and strain.

Newmarket Sauce

Shallots	40 oz.
Capsicum	1 lb.
Cloves	3 oz.
Celery-seed	2 oz.
Mace	1 oz.
Walnut ketchup	2 qts.
Mushroom ketchup	2 qts.
Indian soy	3 qts.
Beaufoy's acetic acid	1 gal.
Water	6 gals.
Salt	2 lbs.

Peel and slice the shallots, bruise the capsicum, cloves, celery-seed, and mace, and pour on the other ingredients.

Lord Palmerston Sauce

Mace	℥iv.
Cloves	℥vj.
Nutmeg	℥vj.
Cayenne pepper	℥vj.
Shallots (peeled and sliced)	℥xvj.
Mushroom ketchup	Oiv.
Walnut ketchup	Oiv.
Port wine	Oiv.
Pickling vinegar	Cong. iiss.

Bruise all the spices together and macerate, with the shallots, in the vinegar for a week; then add the other ingredients, and, after another week, strain.

Penny Sauce

Sauce gruffs	6 lbs.
Vinegar	2 gals.
Sliced garlic	2 oz.
Treacle	3 lbs.
Soy	2 lbs.
Salt	8 oz.
Capsicum	½ oz.
Caramel	1 lb.
Essence of anchovy	8 oz.

Boil the gruffs with the vinegar, garlic, and salt half an hour; strain, add the rest of the ingredients, and boil for another half-hour, and bottle when cold.

Quin's Fish-sauce

Bruised anchovies and shallots, 6 of each.

Cayenne	ʒss.
Soy	℥ss.
Port wine	℥iij.
Walnut pickle	℥iij.
Mushroom ketchup	℥vj.

Simmer gently for ten minutes and bottle.

Reading Relish

Powdered capsicum	℥ss.
Bruised ginger	℥j.
Bruised long pepper	℥j.
Bruised mustard-seed	℥j.
Essence of anchovy	℥ij.
Indian soy	℥xv.
Water	Oij.

Boil together for an hour and add to

Vinegar	Oij.
Mushroom ketchup	Oj.
Bruised shallots	℥iss.

previously boiled half an hour. Allow the mixture to simmer with a dozen sweet-bay leaves half an hour and strain.

Royal Relish

Garlic (peeled and sliced)	ʒiiiss.
Tincture of capsicum	ʒij.
Indian soy	℥xvj.
Tomato sauce	℥xxxij.
Walnut ketchup	℥xxxij.
Pickling vinegar	℥lxiv.

Macerate for a month and strain.

Savory's Hot Pickle

Cayenne	ʒij.
White pepper, black pepper, and mustard-seed, of each	℥j.
Ginger	℥ij.
Common salt	℥vj.
Vinegar	Oiv.

Boil for twenty minutes and strain.

Sauce l'Empereur

Cloves, mace, and pimento, of each	ʒj.
Anchovies and walnut-juice, of each	℥xvj.

Boil and add

2 shallots.	
Indian soy	℥v.
Port wine	℥x.
Vinegar	Oj.

Boil and simmer for twenty minutes, and strain.

Sauce Piquante

Horseradish	℥j.
Salt	℥iv.
Mustard	ʒij.
Shallots	℥ss.
Celery-seed	ʒss.
Cayenne	ʒss.
Tarragon vinegar	Oj.

Bruise the solids and macerate in the vinegar for fourteen days; then strain.

Sauce au Roi

Cayenne	℥j.
Cloves and shallots, 6 of each.	
Walnut-juice and Indian soy, of each	℥v.
Vinegar	Ovj.

Boil for twenty minutes and strain.

Sauce Superlative

Claret	℥xx.
Mushroom ketchup	℥xx.
Pickled walnut	℥x.
Anchovies	No. iv.
Fresh lemon-peel	℥j.
Shallots	℥j.
Horseradish	℥ij.
Allspice	ʒiv.
Black pepper	ʒiv.
Cayenne	ʒiij.
Celery-seed	ʒj.
Soy	℥v.

Macerate for fourteen days and strain.

Somerset Sauce

Garlic (peeled and sliced)	ʒvj.
Shallots (peeled and sliced)	℥j.
Cayenne pepper	ʒv.
Common salt	℥ij.
Port wine	Oj.
Indian soy	Oij.
Walnut ketchup	Oiij.
Chillie vinegar	Oivss.
Mushroom ketchup	Oivss.

Macerate for a month and strain.

Tomato Sauce

I

Ripe tomatoes	6 quarts

Bruise, and set in an oven with ½ lb. of salt and a quart of water. At the end of an hour pour off a gallon of juice, and to this add

Shallots (peeled and sliced)	℥iv.
Black pepper (bruised)	℥ss.
Mace (bruised)	℥ss.
Pimento (bruised)	℥ss.
Ginger (bruised)	℥ss.
Nutmeg (bruised)	℥ss.
Cochineal (in coarse powder)	ʒij.
Cayenne pepper (in coarse powder)	ʒj.
Brown vinegar	Oj.

Simmer gently for half an hour, strain, thicken with ʒiv. powdered tragacanth, and bottle.

II

Ripe tomatoes	3 doz.
Chillie vinegar	1 pint
Garlic	1 oz.
Shallots	1 oz.
Common salt	2 oz.
Cayenne pepper	¼ dr.
Lemon-juice	5 oz.

Put the tomatoes into a jar and warm in an oven until tender. Cool, skin, and pulp the fruit, and add to the liquor in the jar, along with the rest of the ingredients. Mix well and bottle.

Thick York Sauce

Garlic (peeled and sliced)	℥ss.
Cayenne pepper . .	ʒj.
Mustard	℥iss.
Salt	ʒij.
Essence of anchovies .	℥iss.
Walnut pickle . . .	℥vj.
Mushroom ketchup . .	℥vj.
Brandy	℥viij.
Indian soy . . .	℥viij.
Brown vinegar . .	℥xlviij.

Macerate for a month and strain.

True Blue Sauce

Tincture of capsicum .	℥iss.
Mushroom ketchup . .	℥vj.
Distilled vinegar . .	℥vj.
Reading sauce . .	Oss.

Mix.

Worcester Type

Liver	20 lbs.
Water	10 gals.

Boil twelve hours, frequently renewing the water. Chop up the liver, work with the water, pass through a sieve, and mix with the following:—

White vinegar . .	15 gals.
Walnut ketchup . .	10 gals.
Mushroom ketchup .	10 gals.
Madeira wine . . .	5 gals.
Table-salt . . .	25 lbs.
Canton soy . . .	4 lbs.
Cayenne pepper (bruised)	2 lbs.
Ginger (bruised) . . .	1 lb.
Black pepper (powdered)	1 lb.
Allspice (powdered) .	1 lb.
Coriander (powdered) .	1 lb.
Mace	½ lb.
Cinnamon . . .	½ lb.
Assafœtida (dissolved in 1 gal. of brandy) . .	¼ lb.

Allow to stand for a month and strain.

At the trial of an action by Goodall, Backhouse & Co. (May, 1895) to restrain another firm from selling as Yorkshire Relish a sauce not made by the plaintiffs, Mr. A. H. Allen, F.I.C., Mr. Otto Hehner, F.I.C., and Dr. Thomas Stevenson gave evidence relating to the composition of the sauces. Both Mr. Allen and Mr. Hehner agreed that a marked peculiarity of the imitation 'relish' was the large amount of cream of tartar it contained in the form of crystals. Dr. Stevenson stated that the specific gravity of the genuine Yorkshire Relish was 1·110, and of the imitation 1·077. The acidity of the former was 3·62, and of the latter 3·68. The total of dissolved solid matters (dried at 212° and 248° F.) in the genuine was 27 and 23·25; while the imitation gave 15·94 and 14·95. The mineral matter in the genuine was 4·95, and in the imitation 2·72; the nitrogen 0·13 and 0·16; nitrogenous matter, equal to albuminoids, 0·82 and 1; sugar (glucose), 9·66 and 9·78; invertible sugar—cane-sugar—3·08, but none in the imitation. From this last-mentioned result Dr. Stevenson inferred that cane-sugar was added as an ingredient in one, or some substance that became sugar, and remained as such. There was practically twice as much chloride of sodium in Goodall's relish as in the defendants', and there was in the plaintiffs' 0·80 per cent. of alcohol, and in the defendants' not more than 0·1. Cream of tartar was much more abundant in the defendants' than in the plaintiffs' sauce, which seemed to point to this—that either cream of tartar or some fruit containing tartaric acid had been used in larger quantities in the defendants' than in the plaintiffs'. In odour the defendants' sauce was more garlicky and less aromatic than the plaintiffs'.

These statements are quoted here to show how many things have to be considered in constructing a sauce, and how difficult it is to imitate.

KETCHUPS AND PICKLES

Cucumber Ketchup.—Peel ripe cucumbers, grate the fleshy portion, and pass it through a colander or coarse sieve to free it from seeds. To each 3 pints of the pulp add 2 oz. of salt, ½ oz. of white pepper in powder, and 1 pint of vinegar. Macerate for a fortnight, occasionally stirring, and strain.

Horseradish Ketchup.—Macerate 1 lb. of grated horseradish in 2 pints of vinegar for a month and strain.

Mushroom Ketchup.—Upon a suitable quantity of the fresh mushrooms sprinkle salt (about 1 to 4 of the fungi), and after three days squeeze out the juice. To every gallon of juice add black pepper, ginger, and cloves, of each ½ oz., pimento 2 oz., mustard seed 2 oz., and a sufficient quantity of salt. Boil for five minutes and set aside to settle. Strain after seven days.

Tomato Ketchup.—Well-strained tomato sauce; for example, No. 1. without the tragacanth.

Walnut Ketchup.—Crush ten dozen green walnuts, and to the mass add ground black pepper 1½ oz., ground nutmeg 1½ oz., ground cloves ½ oz., ground ginger ½ oz., ground mace ¼ oz. Boil the whole in ½ gal. of vinegar for half an hour, then set aside for a week and strain.

Walnut Pickle.—The manufacture of pickles is a subject which scarcely comes within the scope of the present volume, and if we may judge from *The Chemist and Druggist's* experience, there is little demand from the drug-trade for such information. But as walnut pickle occurs in several of the foregoing formulas it may be stated that it is made by steeping fresh and ripe walnuts (freed from the shells) in strong brine for a week, removing, drying in the air for a day, then packing in jars and covering with boiling pickling vinegar.

Lemon Pickle.—Slit unpeeled lemons, previously cured, into quarters without separating the pieces, sprinkle with salt, and lay aside in dishes for a week. Then pack in jars with two or three cayenne pods to each lemon and a good sprinkling of turmeric, and cover with hot vinegar.

Pickling-mixture.—Common salt 3 lbs., brown sugar ½ lb., saltpetre 4 oz., and water 2 gals. Boil half an hour, and strain. Before being placed in this, meat should be rubbed twice or three times a week with a mixture of bay salt 8 oz., common salt 8 oz., brown sugar 6 oz., saltpetre 2 oz., and black pepper 2 oz. Mix.

Soy.—This common ingredient of sauces is generally imported from the East. It is made from the seeds of *Glycine Soja* (*Soya hispida*), which is largely cultivated in China, India, and Japan. The seeds or beans are first roasted like coffee, and to this a certain quantity of malted barley (also partially torrified) is added, with a liberal dose of salt and cold water to make the whole into a gruel. This is set aside for some time, then a special ferment is added, and the mixture kept for a long time—frequently for three years, if the quality of the product is to be the best. The method of manufacture, so far as the details are concerned, is practically a secret; and as the product cannot be accurately imitated, we recommend only the imported soy to be used in making sauces. Factitious Soy is made by mixing together 1 gal. of malt syrup (ext. malt 4 lbs., water to 1 gal.), 5 lbs. of treacle, 4 lbs. of salt, and 2 pints of mushroom-juice. Heat gently in order to facilitate the mixing, set aside for a fortnight, and decant from any deposit.

VINEGARS

The law has not yet interpreted vinegar to mean the product obtained as the British Pharmacopœia directed—viz., 'from a mixture of malted and unmalted grain by the acetous fermentation.' For pickling purposes malt vinegar is strong enough if the vegetables are allowed to remain in pickle for at least four months, otherwise the vinegar must be fortified with acetic acid. The common Pickling Vinegar in demand during the pickling season is a mixture of 1 part of acetic acid 33 per cent., and 4 or 5 parts of water. Of course a spiced vinegar is more acceptable, and when condiments are not used along with the vegetables the spiced article alone should be employed.

It is well to remember that a certain minimum of acetic acid (between 3 and 4 per cent.) is necessary to prevent fermentation of vegetables; and the reason for using vinegar double that strength is that the water in the vegetables lowers the percentage of acid. Pickling malt vinegar (No. 24) is also obtainable, and either it or the acetic-acid vinegar above mentioned may be used in compounding the following recipes, which are for preparations to be used in making sauces or for pickling :—

Celery Vinegar

Celery-seed, bruised	℥vj.
Vinegar	Cong. j.

Macerate for a month and filter.

Chillie Vinegar

Bruised capsicum	℥iv.
Vinegar	Cong. j.

Macerate for a month and filter.

Generally speaking, the above strengths are those adopted in making simple vinegars, such as those of curry, garlic, horseradish, and shallots. Tarragon Vinegar is, however, made differently—viz., by bruising any desired quantity of the fresh leaves, placing the bruised mass into a jar and covering with vinegar. Stir every day for a fortnight, then press and filter. The tarragon is *Artemisia Dracunculus*, and its aromatic principle is identical with anethol.

Spiced Vinegars

For French Beans

White pepper	℥iv.
Sliced ginger	℥ij.
Capsicums	℥j.
Vinegar	Cong. j.

Macerate the spices in ½ gal. of the vinegar for twelve hours, then simmer without boiling for half an hour; add the rest of the vinegar, and use hot.

For Gherkins

Black pepper	℥vj.
Bruised ginger	℥iv.
Capsicums	℥j.
Sliced garlic	℥j.
Vinegar	Cong. j.

Boil in half the vinegar for an hour, strain and wash the marc with the rest of the vinegar. Then boil the marc and 2 oz. of salt in a pint of water for an hour, add another pint of vinegar, and strain into the first infusion.

For Walnuts

Black pepper	℥viij.
Bruised ginger	℥vj.
Bruised mustard-seed	℥xvj.
Bruised cloves	℥ij.
Bruised mace	℥ij.
Bruised garlic	℥ij.
Vinegar	Cong. ij.

Boil the spices in a gallon of the vinegar and strain into the jar of walnuts. The other gallon of vinegar may be separately boiled and also poured upon the walnuts.

For Use with any Vegetable

Jamaica ginger	℥ss.
Pimento	℥ss.
Curry powder	℥j.
Long pepper	℥iss.
Black pepper	℥iss.
Mustard	℥iv.
Mustard-seed	℥iv.
Vinegar	Oiv.

Bruise the spices and simmer gently in the vinegar for ten minutes, cool, and strain.

Vinaigre aux fines herbes.—Fresh horseradish, tarragon-leaves, thyme, marjoram-leaves, sage, mint, and balm leaves, of each 1 oz., shallots 4 (one young), vinegar a quart. Macerate for a fortnight or more and filter. Should have a green colour.

Raspberry Vinegar can be made from the 'gruffs' of pressed fruit used in making jelly. Put the gruffs into a jar and cover with vinegar. Allow to macerate for a few days, then strain, and in each pint of the liquor dissolve ½ lb. or more of sugar. A better vinegar is made by macerating 6 lbs. of the fresh berries in 3 pints of vinegar for ten days and straining, allowing the fruit to drain well.

Anchovy Paste.—This is sometimes called Essence of Anchovies, and is so referred to in some of the formulas; but, strictly speaking, it is a vinegar paste, and is made in the following manner:—

Pound 1 lb. of anchovies in a mortar, put them into a pipkin with 4 oz. of vinegar and boil for a few minutes, then pulp through a hair sieve. To the portion that passes through the sieve add 2 oz. of salt, the same quantity of flour, and sufficient water to give it the proper consistence. Boil them together for a few minutes and colour the mixture with annatto. A little cayenne pepper is sometimes added.

Essence of Turtle

Essence of anchovy	℥iss.
Shallot wine	℥ij. ʒij.
Basil wine	ʒvj.
Mushroom ketchup	℥iij.
Citric acid	ʒj.

Mix.

Preserving Mushrooms.—To 1 lb. of button mushrooms, carefully wiped and trimmed, add 1 oz. of fine salt, evenly distributed. After a few minutes' stirring put them in a covered jar, and set for half an hour in a moderately hot oven. Then pour off the exuded liquor, to it add one-fifth of its measure of B.P. acetic acid, and raise to the boiling-point in an enamelled saucepan. Finally, pour it back upon the mushrooms, still kept warm, adding ½ dr. mace (broken up) and 1½ dr. of whole black pepper. Set aside for a fortnight.

CURRY POWDER

This condiment is one of the things England gained when she conquered India—that is to say, the taste for it, because no Indian cook worth his salt would tell how he makes his curry. Yet every maker of curry powder considers his own particular article the only original condiment. Of such we give more than a score of recipes which have come from Hindoo cooks, East Indian missionaries, and military heroes—men who have suffered for their country in curry as well as in warfare.

It should be noted that it is a mistake to have the powder a pure yellow colour; rather should it be brownish, with a yellow tinge. Hence it should contain not more than 25 per cent. of turmeric. Nor must it be forgotten that flavour is important above all other requirements. This is to be obtained by using fresh condiments, freshly ground, and (herein lies the philosopher's stone of curry) ground together. Pungency is a matter of cayenne pepper, and can be controlled at will. Preference is given to those powders containing cardamoms and cummin, but all the formulas given in the table require modification of the proportion of turmeric.

For all practical purposes the first two formulas are quite suitable. The powders are well—even richly—flavoured, and are excellently adapted for retailing.

I

Coriander-seed . .	℥vj.
Cardamom-seed . .	℥ss.
Madras turmeric . .	℥iij.
Jamaica ginger . .	ʒiij.
Cayenne pepper . .	ʒiij.
Cummin-seed . . .	℥j.
Fenugreek-seed . .	℥iss.
Cinnamon . . .	℥ij.
Pimento	ʒij.
Black pepper . . .	ʒj.
Long pepper . . .	ʒj.
Cloves	ʒj.
Nutmeg	ʒj.

The whole to be in powder, mixed intimately in a mortar and sifted.

II

Sem. coriand. . .	℥xiij.
Piper. nigri . . .	℥v.
Fruct. capsici . . .	℥j.
Sem. cymini . . .	℥vj.
Sem. fenugræci . .	℥vj.
Rad. curcumæ . .	℥vj.

Grind the whole of these substances together in the mill and sift.

It sometimes happens that the retailer is asked to match a particular curry powder. In such cases the following table of formulas will be found very useful. The retailer should endeavour by sense of smell and taste to find out what the powder submitted is composed of, and after some practice and patience the approximate composition is fairly arrived at. A comparison of the analytical notes with the table will then give a basis for working upon, the final adjustment of the flavour being attained by adding some of the spice in which the compounded powder is deficient.

—	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX
Turmeric	4 oz.	2 oz.	3 oz.	5 oz.	6 oz.	2 oz.	8 oz.	6 oz.	8 oz.	3 oz.	8 oz.	6 oz.	3 oz.	8 oz.	8 oz.	3 oz.	2 oz.	4 oz.	1½ lb.	4 oz.
Coriander-seed	8 oz.	6 oz.	1 oz.	3 oz.	1 oz.	1 oz.	2 oz.	13 oz.	2 oz.	4 oz.	16 oz.	6 oz.	6½ oz.	4 oz.	2 oz.	12 oz.	6 oz.	2 oz.	—	12 oz.
Ginger	3 oz.	½ oz.	1 oz.	1 oz.	1 oz.	2 oz.	2 oz.	—	—	2 oz.	—	—	1 oz.	—	2 oz.	—	—	1 oz.	2 oz.	2 oz.
Cinnamon	½ oz.	2 dr.	—	—	¼ oz.	—	—	—	½ oz.	—	—	—	1½ oz.	—	—	—	—	—	—	3 oz.
Cassia	—	—	—	—	—	—	—	—	2 oz.	—	—	—	—	—	—	2 dr.	—	—	—	—
Cardamoms	½ oz.	—	1 oz.	1 oz.	—	½ oz.	1 oz.	—	—	2 oz.	—	—	—	—	—	½ oz.	—	½ oz.	1 oz.	½ oz.
Grains of Paradise	—	—	—	—	—	—	—	—	1 oz.	—	—	2 oz.	—	—	—	—	—	—	—	—
Caraways	—	—	—	—	—	—	—	—	—	—	—	4 oz.	—	—	—	—	—	½ oz	2 oz.	—
Cayenne	2 oz.	6 dr.	¾ oz.	1 oz.	½ oz.	½ oz.	1 oz.	1 oz.	½ oz.	2 oz.	1½ oz.	½ oz.	½ oz.	½ oz.	1 oz.	6 dr.	½ oz.	1 oz.	1 oz.	1½ oz.
Black pepper	1½ oz.	½ oz.	—	1 oz.	4 oz.	—	2 oz.	2 oz.	1 oz.	1 oz.	1½ oz.	1 oz.	2½ oz.	—	—	2 oz.	3 oz.	1 oz.	2 oz.	6 oz.
Mace	—	1 dr.	—	¼ oz.	—	—	—	—	2 dr.	—	—	—	—	—	—	—	—	¼ oz.	—	1 oz.
Fenugreek	—	1½ oz.	½ oz.	—	1 oz.	—	—	—	—	—	2 oz.	—	1 oz.	2 oz.	1 oz.	1 oz.	1 oz.	—	4 oz.	—
Cummin	2 oz.	—	½ oz.	—	1 oz.	½ oz.	2 oz.	3 oz.	—	—	—	—	—	2 oz.	1 oz.	4 oz.	2 oz.	1 oz.	3 oz.	3 oz.
Pimento	—	2 dr.	—	—	—	—	—	—	—	—	—	—	1 oz.	—	—	2 dr.	—	—	—	1 oz.
Cloves	—	1 dr.	—	—	—	—	—	—	½ oz.	—	—	—	2 dr.	—	½ oz.	2 dr.	—	—	1 oz.	2 dr.
Nutmeg	—	½ oz.	—	—	—	—	—	—	—	—	—	—	—	—	1 oz.	—	—	—	—	—
White pepper	—	—	1 oz.	—	—	1 oz.	—	—	—	—	—	—	—	—	1 oz.	—	—	—	—	—
Scorched mustard	—	—	—	2 oz.	—	—	—	—	—	3 oz.	—	—	—	—	—	—	—	—	—	1 oz.
Lemon-peel (in powder)	—	—	—	—	—	1 oz.	—	—	—	—	—	—	—	—	—	—	—	—	—	—

CHUTNEYS, OR CHUTNEES

It is impossible in this country to produce a chutney equal to the fine Indian products, for here we have not certain fresh fruits which are material to the flavour. We give, however, three typical formulas :—

I

Apples	5 lbs.
Raisins	1 lb.
Tamarinds	2½ lbs.
Garlic	2 oz.
Salt	1 lb.
Powdered capsicum	4 dr.
Sugar	1½ lb.
Powdered ginger	½ lb.
Vinegar	48 oz.
Ketchup	12 oz.
Citric acid	80 gr.

Prepare like No. III.

II

Gooseberries	2 qts.
Vinegar	2 qts.
Salt	1 lb.
Mustard-seed	1 lb.
Stoned raisins	1 lb.
Brown sugar	1 lb.
Garlic	1½ oz.
Capsicums	¾ oz.

Make a syrup of the sugar with a pint of vinegar. Boil the gooseberries in the rest of the vinegar. Bruise the mustard-seed and the garlic, and with them well incorporate the boiled fruit, mashing the whole thoroughly ; then work in the rest of the ingredients.

III

Peeled and cored apples	6 lbs.
Tamarinds	3 lbs.
Tomatoes	3 lbs.
Sultana raisins	1 lb.
Treacle	1 lb.
Curry powder	8 oz.
Salt	8 oz.
Bruised mustard-seed	2 oz.
Bruised ginger	2 oz.
Bruised garlic	1 oz.
Bruised capsicum	¾ oz.
Bruised mace	½ oz.
Indian soy	16 oz.
Water	1 pint
Vinegar	6 pints

In an enamelled pan boil together all the ingredients except treacle, soy, salt, ginger, and mace, and at the end of twenty minutes pass through a coarse sieve. Put the pulp into a covered jar, stir every day for a fortnight, then add the remaining ingredients to the pulp and boil until it is of suitable consistency.

OTHER FLAVOURING POWDERS, SPICES, &c.

Brown-gravy Salt

(For colouring soups, gravies, &c.)

Sodii chloridi	℥viij.
Sacchar. alb.	℥iv.
Pulv. pip. capsici	gr. v.

Mix all together in a mortar with care transfer to a frying-pan over a good fire, stirring constantly till brown enough, and rub through a sieve whilst hot.

Browning for Gravies

Best white sugar	℥viij.
Butter	℥ij.

Boil together until brown (*see* page 232).

Kaisergewürz, or King's Spice

(A favourite German powder)

Lemon-peel	ʒxviij.
Mustard	℥ss.
Cloves	ʒij.
Nutmegs	ʒij.
Salt	℥j.
Black pepper . . .	℥ss.
Ginger	ʒij.
Capsicums . . .	ʒj.

All to be in fine powder and well mixed.

Celery Salt

I

Common salt . . .	℥iv.
Ess. celery . . .	ʒij.

Mix well together.

Convenient to flavour soups, &c., and for eating with cheese.

II

Common salt (dry) . .	℥xvj.
Celery	℥vj.

Cut the celery into slices of about ¼ inch, and thoroughly incorporate the salt with the slices, without expression or pounding, in a mortar, so that the salt may take up the juicy part of the celery. Put into a dish in an oven for half an hour, then beat up for ten minutes; return to the dish and dry for about an hour; the salt will then have become caked, but a few stirs round with a pestle will soon reduce it, so that the greater portion may be passed through a fine hair sieve. Place in airtight bottles or jars.

Ess. Celery

Celery-seeds (bruised) .	℥j.
Rectified spirit . .	℥iij.

Macerate seven days and filter.

Soluble Cayenne

A strong tincture is made by percolating 1 lb. of pods with rectified spirit until 2½ pints of tincture is obtained; half the spirit is distilled off (and used for the next percolation) and the residue mixed with 5 lbs. of fine dry salt, dried very gently, passed through a sieve, and stored in dry bottles. Sometimes a little sanders or Brazil wood is added to the capsicum. The process may be considerably shortened by using capsicin (oleo-resina capsici, B.P.C.), 1 dr. of which dissolved in an ounce of spirit is sufficient for 1 lb. of salt.

Savoury Ragout-powder

(This is practically Kaisergewürz)

Salt	℥j.
Mustard, black pepper, and lemon-peel (grated), of each . . .	℥ss.
Pimento, ginger, nutmeg, and cayenne, of each .	ʒij.

Mix.

Zest

(A seasoning powder for potted meats, pies, &c.)

Pulv. piper. alb. . .	℥iiss.
Pulv. macidis . . .	℥ss.
Pulv. myristic. . .	℥ss.
Pulv. capsici . . .	℥ss.

M.

Salad-dressing

Mix the yolks of four eggs with ½ oz. of mustard, then beat in with an egg-whisk 4 oz. of salad oil, then the same of the best vinegar and of water, and finally 1 dr. of table-salt. This makes a splendid dressing, but should be made as required. The following is for bottling:—

Two eggs.	
Best olive oil . . .	℥iv.
Vinegar	℥v.
Soluble cayenne . .	ʒss.
Table-salt . . .	ʒiss.
Russian isinglass . .	ʒss.
E.S. mustard flour . .	℥ss.

Beat up the eggs thoroughly and

emulsify the oil with the mixture, then add the isinglass, cayenne, and salt previously dissolved in the vinegar. Again mix well, and work in the mustard carefully.

Pork-sausage Flavouring

I

White pepper	2 oz.
Jamaica pepper	6 dr.
Black pepper	3 dr.
Ginger	3 dr.
Capsicum	2 dr.
Mace	1 dr.
Cloves	10 gr.

All in fine powder, mixed. A little nitre helps to keep the colour of the meat.

II

Powdered celery-seed	ʒij.
Powdered mace	ʒj.
Powdered nutmeg	ʒj.
Powdered black pepper	℥ij.
Powdered common salt	℥ij.
Ground rice	℥vj.

Mix well, tinting the powder a dark salmon colour by means of finely powdered red sanderswood.

German Spice

Cardamoms	℥j.
Ginger	℥j.
Cloves	℥ij.
Anise	℥iv.
Coriander	℥viij.

Powder and mix.

This spice is used in making potted meats and the like.

Mixed Spice

Powdered coriander	℥xvj.
Powdered pimento	℥iv.
Powdered caraway	℥iv.
Powdered cinnamon	℥ij.
Powdered mace	℥ij.
Powdered cloves	℥ij.
Powdered nutmeg	℥ij.
Powdered turmeric	℥j.

Mix.

Easter-bun Spices

(London style)

Pulv. myristicæ	℥vj.
Pulv. macidis	℥j.
Pulv. capsici	℥ij.
Pulv. cinnamomi	℥iv.
Pulv. zingiberis	℥viij.

Mix and sift.

(English provincial)

Pulv. myristicæ	℥ij.
Pulv. zingiberis	℥j.
Ol. caryophylli	♏vj.

Mix well in a mortar.

(Scotch style)

Pulv. zingiberis	℥v.
Pulv. coriandri	℥v.
Pulv. carui	℥iiiss.
Pulv. caryophylli	℥j.
Pulv. pimentæ	ʒvj.
Pulv. cassiæ	ʒvj.
Pulv. myristicæ	℥ss.

Mix and sift.

Use 1 oz. to 7 lbs. of flour.

Essence

Pulv. pimentæ	℥ij.
Pulv. cassiæ	ʒj.
Pulv. caryophyll.	℥ss.
Pulv. zingiberis	℥ss.
Spt. rectificat.	℥xiv.
Aq.	℥vj.

Make a pint of tincture by percolation, and in the percolate dissolve ol. pimentæ ʒss.

A teaspoonful to a pound of flour.

Kitchener's Spirit of Savoury Spices

Black pepper	℥j.
Pimento	℥ss.
Nutmeg	℥ss.
Rectified spirit	℥xij.
Water	℥iv.

Make a tincture by macerating for a week.

Sausage-colouring

Various substances are sold under this name, the object of them being to colour the skins. The large makers of polonies use ammoniacal solution of carmine, but this is giving place to a plain watery solution of an artificial red dye. A very good one for the purpose is OOC scarlet. This, or a nearly allied colour, is now much used by sausage-makers, especially in the form—Borax, 6 parts; OOC scarlet, 1 part. For colouring the meat Armenian bole is used, but rice-flour stained with an alcoholic solution of the OOC scarlet is better and safer.

Essence of Herbs for Soups

Savory, sweet marjoram, and basil, of each .	℥ij.
Thyme	℥j.
Sage and black pepper, of each	℥ss.
Celery-seed . . .	ʒiss.
Rectified spirit . .	Oiiss.
Water	℥x.

Make 50 oz. of tincture by percolation with the spirit and water previously mixed.

The addition of lemon-peel and shallots makes a nice change in the flavour—an ounce of each to the above quantity.

Baking-powders

I

Tartaric acid . .	℥xviij.
Bicarbonate of soda .	℥xx.
Ground rice . .	lb. ij. or iij.

Mix.

II

Cream of tartar . .	lb. ij.
Bicarbonate of soda . .	lb. j.
Ground rice . . .	lb. iss.

Mix

III

Tartaric acid . . .	lb. iij.
Bicarbonate of soda . .	lb. iij.
Carbonate of magnesia .	lb. ss.
Rice-flour . . .	lb. viij.

Mix.

IV

Potass. sulphat. acid. .	℥xiij.
Sodæ bicarb. . . .	℥viij.
Pulv. oryzæ . . .	℥xvj.

M.

These four formulas are typical and satisfactory. No. I. is prompt in action, while No. II. is slow-rising and well adapted for pastry. The addition of magnesia is considered to be an advantage in some parts of England, and in the Midlands Epsom salts is added to flour in making bread. It is supposed to whiten it. No. IV. is a cheap baking-powder. Acid phosphate of ammonia is preferable to acid sulphate of potash. It has the same neutralising power as cream of tartar.

Borwick's Baking-powder has frequently been analysed, and the results are no credit to chemistry. The oldest analysis gives its composition as crystallised tartrate of soda 19·12, tartaric acid 6·97, bicarbonate of soda 38·16, rice-flour 30·58, and moisture 5·07. This is obviously incorrect. Another and more rational result is: Tartaric acid 8 parts, bicarbonate of soda 9 parts, and cornflour 12 parts. The third and best is: Tartaric acid 3 parts, bicarbonate of soda 4 parts, and rice-flour 7 parts.

Royal Baking-powder is the leading one in the United States, and an analysis of it by the Agricultural Department there shows it to have the following composition:—Sodium bicarbonate 23·61, residual sodium oxide 1·59, ammonium bicarbonate 0·98, potassium bitartrate 53·34, calcium sulphate 0·31, starch 16·34, water 3·83. It would appear from this that the powder may be made by mixing together 60 oz. of cream of tartar, 28 oz. of bicarbonate of soda, 1 oz. of carbonate of ammonia, and 16 oz. of cornflour. A teaspoonful of the powder is added to each pound of flour.

Alum Baking-powder.—Chiefly owing to the desire for cheapness, alum is used instead of tartaric acid and cream of tartar in manufacturing baking-powder. This practice is common in the United States, but in Great Britain the use of alum in baking-powder was made illegal by the Sale of Food and Drugs Act of 1899, which defines 'food' as 'every article used for food or drink by man, other than drugs or water, and any article which ordinarily enters into or is used in the composition or preparation of human food, and also includes flavouring matters or condiments.' Previous to that it had been held that baking-powder is not food, but since then magistrates have unhesitatingly convicted sellers of alum baking-powder, on the ground that alum is injurious to health. We may, however, note that the points in favour of alum (burnt alum is used) in baking-powder are (1) that the powder remains dry, and does not evolve gas at the normal temperature; (2) in presence of water and flour it reacts with bicarbonate of soda more slowly than cream of tartar. The alum does not remain in the bread as such, but as hydrate of alumina, and each teaspoonful of the powder leaves only about 5 gr. of this hydrate, so that the physiological action of alum does not follow on eating the bread. The subjoined is the correct formula for the powder :—

Dried ammonia alum	℥viij.
Bicarbonate of soda	℥viij. ʒvj.
Rice-flour	℥xvj.
Mix.	

Acid phosphate of potash is also used as a cheap substitute for cream of tartar, 14 oz. of it neutralising 13 oz. of bicarbonate of soda.

Ammonia Baking-powder.—The addition of carbonate of ammonia to baking-powder is more followed in the United States than in England. This modification has the advantage of giving a lighter bread or paste than plain baking-powder. Bakers invariably add the carbonate to their best pastries. A quick-firing oven is necessary for such articles, so that the ammonia may be rapidly volatilised, whereby the pastry is made to rise and become spongy. The Royal Baking-powder already mentioned is a good example of these powders. The two following are quoted as bad formulas, the first being too acid, and the second not admissible because alum is in excess :—

I	
Potassium bitartrate	19 oz.
Tartaric acid	8 oz.
Ammonium carbonate	1 oz.
Sodium bicarbonate	17 oz.
Cornflour	7 oz.
Mix.	

II	
Ammonium carbonate	6 oz.
Tartaric acid	$\frac{1}{2}$ lb.
Alum	1 lb.
Sodium bicarbonate	$1\frac{1}{2}$ lb.
Potato farina	2 lbs.
Mix.	

All the ingredients for baking-powders should be separately and carefully dried before mixing, then sifted several times, and kept in airtight packages. The cream of tartar powders keep best, and although they are not considered so brisk as tartaric acid powders they are, on the whole, more satisfactory than the latter.

In regard to cream of tartar substitutes Mr. W. E. Wadman, an American chemist, says[1] that all the substitutes used in the manufacture of baking-powders, in self-raising flours, and directly in baking have monocalcium phosphate ($CaH_4P_2O_8$) as the active ingredient. They may be divided into two primary classes, according to the method of manufacture. First, those known as Leached Goods are prepared by treating calcium phosphate (generally bone-black) with sufficient sulphuric acid to produce monocalcium phosphate, filtering off the calcium sulphate formed in the reaction, crystallising out the phosphate, grinding it with starch, and drying the mixture. The resulting mixture of monocalcium phosphate and starch contains also from 1 to 6 per cent. of free phosphoric acid, with some insoluble phosphates. The other class is known as Sulphate of Lime Base Goods, and is formed by treating pure white bone-ash with the correct amount of sulphuric acid to form the monocalcium phosphate, and drying and grinding the resulting mixture without separation. Like the other class, these samples contain free phosphoric acid and insoluble phosphates, but rarely contain much, if any, starch; the calcium sulphate left is often wrongly reported as an adulterant, whereas it is an essential part of the mixture, and plays an important part in the reaction of the powder.

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[1] *Journal of the American Chemical Society*, 1894, p. 333.

With powders of the first class the reaction with alkalies mainly results in the formation of $Ca_2H_2P_2O_8$ and Na_2HPO_4; and as both phosphoric acid and calcium monophosphate are readily soluble in cold water, the action takes place in the cold, and dough made with them must be hurried into the oven rapidly if advantage is to be gained from their use. With those of the second class the primary reaction is the same, but on heating to the boiling-point a secondary reaction sets in, probably represented by the equation

$$3Na_2HPO_4 + 3CaSO_4 = Ca_3P_2O_8 + 3Na_2SO_4 + H_3PO_4,$$

which is equivalent to a liberation of fresh carbonic-acid gas, which helps to lighten the dough, because it is gradually evolved as the temperature rises: in this way they are better substitutes than powders of the first class for cream of tartar, which also acts slowly by reason of its much higher solubility in hot than in cold water. The cream of tartar substitutes most in use in Great Britain are Tartaraline, which is acid sulphate of potash with or without 10 per cent. of farina; Cream Powder and Citrolene, which are mixtures of acid phosphates of ammonia and calcium in varying proportions with about 10 per cent. of rice-flour.

The following notes on the leading American baking-powders are by Mr. G. F. Payne, an American pharmacist:—

Name of Baking-powder	Leavening Power or per cent. of Carbonic-acid Gas	Character of Powder	Percentage of Ammonia	Percentage of Sulph. Acid combined as Sulphates	Percentage of Phosphoric Acid
Royal . . .	13·36	Cream of tartar (with tartaric acid)	Trace	Trace	0
Dr. Price's . .	11·82	,,	,,	,,	0
Cleveland . .	13·17	Cream of tartar . .	,,	,,	0
New South . .	12·59	,,	,,	,,	0
Turpin's . .	12·27	,,	,,	,,	0
Dixie . . .	11·90	,,	,,	,,	0
Horsford's Bread Prep.	8·67	Acid phos. of calcium	,,	5·56	26·14
Linden . .	12·85	Am. alum, ac. phos. calcium	1·59	14·61	6·31
Campbell . .	11·38	Ammonia alum . .	1·74	15·70	0
One Spoon . .	10·39	,,	2·60	24·29	0
Gem . . .	9·16	,,	0·90	29·04	0

Self-raising Flour is wheaten flour to each pound of which are added cream of tartar 45 gr. and sodium bicarbonate 45 gr., or two-thirds as much, not more.

The following powders are so closely allied to baking-powders that for convenience they are grouped here:—

Blancmange Powder

Best cornflour . . .	lb. j.
Sago-flour . . .	lb. j.
Oil of lemon . . .	♏x.
Oil of nutmeg . . .	♏v.
Oil of cassia . . .	♏iij.

Mix the oils with an ounce of the sago, gradually add the rest of the powders, and sift twice. The powder may also be flavoured with essence of ratafia instead of the above. Put it up in $1\frac{1}{2}$-oz. packets.

Directions.—Make the contents of this packet into a smooth paste with half a cupful of milk. Dissolve 2 oz. of caster-sugar in a pint of milk and add it, whilst boiling, to the paste, stirring. Transfer to a saucepan, boil for five minutes, and pour into a mould.

Custard Powder.—Many years ago a Mr. H. Scholefield, writing to the *Pharmaceutical Journal*, recommended the following :—

I

Pulv. gum. tragac.	2 oz.
Pulv. farinæ (potato starch)	1 lb.
Pulv. curcumæ	℥iiss.
Ol. ess. amygdal.	℥ss.
Ess. limonis	ʒj.

M.

Put up in 1-oz. packets. From 1 pint of new milk take two tablespoonfuls, to be rubbed up with the powder. Boil the remaining milk with 2 oz. of lump-sugar, and pour while boiling into the basin, stirring quickly meanwhile until mixed. Bake as a custard.

This formula has done duty for nearly half a century, and there are few books on cookery which do not contain it. Some ten years ago we accidentally discovered that it will not work at all, and it is quite unlike the popular articles—Bird's, for example. There is no gum in the popular powders, nothing but starch, colouring, and flavouring. The best colouring is fluid extract of saffron, which is solely used by one eminent manufacturer; next to that are the synthetic orange dyes. Turmeric is not so good, because of its flavour. The following are reliable recipes :—

II

Pulv. oryzæ	lb. ij.
Pulv. marantæ natal.	lb. j.
Ext. croci fluid.	ʒj.
Ol. amygd. essent.	♏xx.
Ol. neroli	♏iij.

Mix the liquids in a mortar with a few ounces of rice-flour, until 8 oz. of the latter has been used, sift, and mix with the rest of the flour and arrowroot. Again sift.

III

Oswego cornflour	lb. j.
Powdered turmeric	ʒj.
Oil of bitter almonds	♏x.

Mix the oil and turmeric with the flour as in No. II.

Twenty drops of a spirituous solution of azo-orange may be used instead of turmeric.

The directions are as for Scholefield's powder, but it is not necessary to bake.

Egg Powder.—Colour No. 1. baking-powder with 6 dr. of powdered turmeric to the total quantity there given, or with 2 gr. of azo-orange, dissolved in rectified spirit, to each pound. Mix the colouring matter thoroughly with the powder. In the case of the azo-orange it is advisable to mix an ounce of the flour with each grain of orange and dry at a gentle heat before adding the rest of the powder ingredients by triturating in a mortar. A teaspoonful of the product is to be used with each pound of flour.

CULINARY COLOURINGS, ESSENCES, AND FLAVOURINGS

Flavouring essences the preparation of which is not specially indicated in the following pages may be prepared by dissolving 1 oz. of the essential oil in 19 oz. of rectified spirit, and colouring if desired. Turmeric is the common yellow colouring, and is used for lemon, but there are others equally suitable (*see* page 233). An excellent reddish-brown colour is obtained from red sanderswood, and is used for cinnamon; caramel is the best brown colouring; cudbear gives a magenta better suited than cochineal for fruit essences such as raspberry.

Allspice

Oil of pimento . .	℥j.
Caramel	ʒj.
Spirit to	Oj.

Mix, and after standing a day filter.

Almond

Essential oil of almonds .	℥j.
Spirit	℥xix.

Dissolve.

Cayenne

Tr. capsici, B.P.

Celery

See page 275; or may be prepared from the essential oil, 1 oz. to 39 oz. of rectified spirit.

Cinnamon

Oil of cinnamon . .	℥j.
Tincture of cinnamon .	℥j.
Spirit	℥xviij.

Mix.

Cloves

Oil of cloves . . .	℥j.
Caramel . . .	ʒiss.
Spirit to . . .	Oj.

Mix, and after a day filter.

Cochineal.—Difficulties are often experienced in the preparation of cochineal colouring—first, in bringing out the full colour of the dye, which is only possible by the formation of a 'lake' through the influence of alumina; and, second, by the proneness of the liquid to ferment. This latter characteristic is mainly due to the fact that the custom still persists of adding sugar to the liquid, and not enough of that to make a good syrup. The sugar is absolutely useless in the liquor: it is not wanted by the cook, it has no beneficial action on the colouring matter, and it is decidedly disadvantageous to the keeping properties of the preparation. In some formulas which we print it is therefore replaced by glycerine; and should it be desired to make the liquor sweeter, from 5 to 10 gr. of saccharin may be added to each pint. Salt (℥iss. to Oj.) gives piquancy and preserves.

I

Powdered cochineal[1] .	℥ij.
Carbonate of potash .	℥iij.
Glycerine . . .	℥viij.
Distilled water . .	℥xxiv.

Rub the cochineal and potash together in a large mortar, gradually adding the glycerine, then the water. Allow to stand for two hours, occasionally rubbing; then add the following powder, intimately mixed:—

Cream of tartar . .	℥iij.
Potash alum . . .	℥iij.

When effervescence has ceased filter the liquid and reserve the filtrate. Now wash what remains in the filter with distilled water as long as any appreciable amount of colouring is obtained and evaporate this second filtrate, so that the residue, added to the first, will make 32 fl. oz. If not quite clear, filter or set aside to deposit, and decant.

II

Cochineal (bruised) . .	℥j.
Carbonate of potash .	℥j.
Water	℥viij.

Mix and heat just below the boiling point for half an hour, then add to it gradually, and with constant stirring

Potash alum . . .	℥j.
Citric acid . . .	℥ss.

powdered and previously mixed. When effervescence ceases remove from the source of heat, filter, and set aside in a stoppered bottle. Wash the marc with hot water, and evaporate the washings until, with the first filtrate, 8 oz. of liquid is obtained; add $1\frac{1}{2}$ oz. of rectified spirit to this, set aside for a day, filter from any deposit, and make up to 12 fl. oz. with glycerine.

The addition of 10 minims of chloroform to each pint of the colouring helps to keep it, but it is unnecessary when glycerine is used. No. I. is also made by keeping back the glycerine to the end, preparing it with the other ingredients by No. II. way, finally evaporating the clear liquors to 16 oz., and adding glycerine 16 oz. This gives a splendid colour.

It will be observed that potash alum is indicated. The reason for this is that ammonia alum (the kind now generally on the market) has been found by experience to be prejudicial to the colouring. One may easily determine whether an alum is ammonia or potash by rubbing a few grains of it in a small mortar with a few drops of liquor potassæ. If it is ammonia alum the odour of ammonia may be perceived in the mortar. Or the test may be applied by heating in a test tube. We may quote here the American 'National Formulary' recipe for Liquor Coccineus (No. III.), which is excellent, and to this add two formulas for the carmine colouring :—

---

[1] The 'Extra Pharmacopœia' recommends that the cochineal should not be bruised, but simply boiled with the potash and water.

III

Cochineal in No. 50 powder	1 tr. oz.
Carbonate of potassium	½ tr. oz.
Alum	½ tr. oz.
Bitartrate of potassium	1 tr. oz.
Glycerine	8 fl. oz.
Rectified spirit	1 fl. oz.
Water to make	16 fl. oz.

Triturate the cochineal intimately with the carbonate of potassium and 8 fl. oz. of water. Then add the alum and bitartrate of potassium successively, heat the mixture to boiling in a capacious vessel, then set it aside to cool, add to it the glycerine and the spirit, filter, and pass enough water through the filter to make 16 fl. oz.

IV

Carmine	℥j.
Solution of ammonia	℥vj.
Glycerine	℥xvj.
Water to	℥xxxij.

Dissolve the carmine in the ammonia solution, add the glycerine and a little water; warm gently until only a faint smell of ammonia is left, and make up to 32 oz. with water.

V

Carmini	℥j.
Liq. ammon. fort.	℥vj.
Spt. vin. rect.	℥iv.
Chloroformi	ʒss.
Sacch. alb (in lumps)	lb. iij.
Aquæ destil. ad	Oiv.

Rub the carmine down with the ammonia; make the sugar into a syrup with 2 pints of water, and when cold add to the carmine solution; then add the spirit in which the chloroform has been dissolved, and make up to 4 pints with aqua destil. Strain through fine muslin.

Of these two carmine formulas we prefer No. IV. (devised by Rouse). It keeps much better than No. V., and is not so ammoniacal as it. When a cochineal colouring is required quickly this form has obvious advantages, but the older-fashioned article made from silver-grain cochineal is the better. Potash solution may be used instead of ammonia solution. Use liquor potassæ, B.P., ℥iss. to carmine ℥j.; otherwise proceed as above directed.

Lemon

Grate the outer yellow portion off several lemons, and of the grated rind take 1 oz. and macerate in 19 oz. of rectified spirit for four days; strain. To the strained tincture add oil of lemon 2 oz. Shake occasionally and well for two hours. Next day decant the spirituous portion from the undissolved oil. Reject the oil. Add to the tincture ½ oz. of washed kaolin or asbestos and filter. The asbestos filter will do again.

This makes an excellent culinary essence of lemon. A cheaper article may be made by shaking oil of lemon 2 oz. with 18 oz. of spirit, as above directed, and filtering.

Some make the essence by dissolving the oil in absolute alcohol, an entirely unnecessary and expensive procedure, as the terpenes of the oil are not needed.

Mace

Essential oil of nutmeg .	ʒj.
Bruised mace . . .	ʒj.
Rectified spirit . .	℥xix.

Macerate for four days and filter.

Nutmeg

Exclude the mace in the last formula.

Orange

Prepared in the same way as essence of lemon, using sweet-orange peel and oil of orange. As the latter is more soluble in rectified spirit, decanting is unnecessary in this case.

Ginger

Rad. zingib. jam. cont. .	45 oz.
Spt. vin. rect. . .	140 oz.
Sacch. alb. . . .	2¼ lbs.
Sem. cardam. min. contus.	2 oz. 2 dr.

Macerate one month and filter.

Tr. zingib. fort., B.P., may also be used, but the above is superior for culinary purposes.

Ratafia.—Plain essence of almonds is sometimes given for this, but the correct thing nowadays is

Ol. amygd. essent.	ʒj.
Tr. aurantii	ʒj.
Spt. rectificat.	℥viij.

M.

The word 'ratafia' is practically all that remains to us of a branch of the culinary art which was highly esteemed at the beginning of the century. There were a host of 'ratafias' then, many of them perfectly innocent of almonds. More for curiosity than utility we reproduce three formulas from a forgotten work which was popular when George the Third was king :—

Receipt for making Red Ratafia, Fine and Soft

Take of the black-heart cherries twenty-four pounds; black cherries, four pounds ; raspberries and strawberries, of each three pounds ; pick these fruits from their stalks and bruise them, in which condition let them continue twelve hours ; press out the juice, and to every pint of it add a quarter of a pound of sugar. When the sugar is dissolved, run the whole through the filtrating bag, and add to it three quarts of clean proof spirits. Then take of cinnamon four ounces ; of mace an ounce ; and of cloves two drachms. Bruise these spices ; put them into an alembic with a gallon of clean proof spirits and two quarts of water, and draw off a gallon with a brisk fire. Add as much of this spicy spirit to your ratafia as will render it agreeable to your palate—about one-fourth is the usual proportion.

Ratafia from Peaches

After a learned disquisition on peaches the author says : An excellent cordial may be easily made in the following manner :—

Take your peaches, bruise them, and instantly strain out their juice through a piece of strong linen. In this juice, without any mixture of water, dissolve your sugar; and when the sugar is melted add the quantity of spirit. No spices must be used in this ratafia, the fine flavour of the peach being far preferable to all spices in the world. The quantity of either the sugar or spirit may be augmented or lessened according to your own judgment, or in proportion to the price of your ratafia. As soon as the spirit is added to the dulcified juice of the peaches, the whole must be filtrated through a flannel bag, put into bottles close stopped; for the fine flavour of the peach will soon be lost unless the bottles are very well corked.

Receipt for making Ten Gallons of Common Ratafia

Take of nutmegs, eight ounces; bitter almonds, ten pounds; Lisbon sugar, eight pounds; ambergris, ten grains; infuse these ingredients three days in ten gallons of clean proof spirit and filter through a flannel bag for use. The nutmegs and bitter almonds must be bruised, and the ambergris rubbed with the Lisbon sugar in a marble mortar before they are infused in the spirit.

Rennet (*Liquor seriparus*).—The stomach of the calf contains a peculiar ferment which has the property of coagulating milk by the separation of casein. This action is exerted at blood heat upon milk which has not previously been boiled, for in the latter case part of the phosphates in the milk combine with some of the casein, and prevent coagulation. This may, however, be overcome by ensuring a slight trace of lactic acid (1 in 1,000) in the milk, whereby the phospho-casein compound is broken up. It is upon this fact that the old-fashioned idea of making essence of rennet with sour milk seems to be based. At all events it was not until 1885 that Engling definitely proved the fact by research. Before then the addition of lactic acid to essence of rennet had been recommended in *The Chemist and Druggist*.

Calves' Stomachs or Vells are now a regular commercial article, and may be obtained all the year round. For commercial purposes the stomachs are cleaned and filled with common salt. The latter becomes charged with the ferment, and should not be rejected. Generally the vell and salt may be weighed together, and the two reckoned as half and half.

Maceration of the rennet with the menstruum for a month or six weeks is generally recommended. This is ridiculous. The ferment dissolves in the menstruum quickly (in from four to seven days), and longer maceration makes filtration more difficult. We therefore recommend the following method of operation :—(1) Macerate the rennet as directed in the formulas for a week; (2) strain and add six drops of glycer. acid. tannic. to each pint, shake, and set aside for three days; (3) decant the clear portion carefully and filter the sediment.

I

Two salted rennets.

Water	Cong. j.
Salt	℥xvj.
Glycerine . . .	℥x.
Boric acid . . .	℥ij.

Let stand three days and filter.

If at the end of three days the liquor is strained and 2 oz. of fullers' earth added, most of it can be decanted clear a few days later.

The advantage of using the dried rennets is that this quantity will filter in about an hour.

II

One rennet.

Salt	℥iv.
Rectified spirit . .	℥iv.
Glycerine . . .	℥ij.
Syrupy lactic acid . .	ʒj.
Chloroform . . .	♏x.
Water	℥xxxv.

Chop the rennet small, macerate for four days, decant, and filter the dregs. Should measure ℥xl.

III

Dried vells, shaken free from salt and cut small	24 lbs.
Salt	12 lbs.
Rectified spirit .	4 gals. 32 oz.
Sherry	1 gal.
Water	18 gals.

Macerate for a week, strain, and set aside to clear, adding a few ounces of fullers' earth before so doing. Decant and filter.

IV

Fresh calf's rennet .	2 tr. oz.
Chloride of sodium .	360 gr.
Rectified spirit . .	4 fl. oz.
Water	16 fl. oz.

Dissolve the chloride of sodium in the water, add the spirit, and macerate the rennet in the mixture during three days under frequent agitation, then filter.

The last formula is from the American 'National Formulary.' The second formula is the best for use on a small scale, and by a slight modification one can make essence by it in five minutes. The modification is: Omit the rennet and the salt, and use instead 2 oz. of rennet-powder; shake with the mixed liquids, and filter. It is better to stand overnight. The first and third formulas are used by manufacturers; but the whole of the formulas are typical, and are selected from a number which may differ in respect to flavour and colour, but are the same in regard to curdling power. The habit of flavouring essence of rennet is not general, but in some districts it is preferred. The following are the mixtures to use :—

I	
Oils of pimento, bitter almonds, nutmeg, cloves, and lemon, of each	ʒj.
Mix.	

II	
Oil of cloves	♏x.
Oil of nutmegs	♏x.
Essential oil of almonds	♏v.
Mix.	

Twenty minims of either of these is sufficient for a pint of the essence of rennet. The oils should be dissolved in spirit, and fullers' earth or kaolin must be used in filtering.

Cheese Rennet is concentrated essence of rennet.

Rennet Powder is a mixture of salt and the curdling ferment, the latter being made in a similar way to pepsin.

Spice Essence

One of powder to 10 of S.V.R.

Strawberry

This and similar fresh fruit essences are made by covering the fruit with rectified spirit (1 pint to 4 to 6 lbs. of fruit) and macerating for ten days. Five per cent. of artificial essence is then added and the liquor filtered, magenta being added to bring up the colour.

Vanilla

(*See* page 153).

Artificial Fruit Essences.

(Kletzinsky's Formulas revised)

—	Apple	Apricot	Blackcherry	Cherry	Cider	Currant	Grape	Jargonelle	Lemon	Melon	Orange	Peach	Pear		Plum	Raspberry	Strawberry
Acid, benzoic	—	—	2	1	—	1	—	—	—	—	—	—	—	—	—	—	—
Acid, oxalic	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Acid, œnanthic	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Acid, succinic	—	—	—	—	—	1	3	—	1	—	—	—	—	—	—	1	—
Acid, tartaric	—	1	—	—	—	5	5	—	10	—	1	—	—	—	—	5	—
Alcohol, amylic	—	2	—	—	4	—	—	—	—	—	—	2	—	—	—	—	—
Aldehyde	2	—	—	—	—	1	2	—	2	2	2	2	—	—	5	1	—
Chloroform	1	1	—	—	4	—	2	—	1	—	2	—	—	—	—	—	—
Ether, acetic	1	—	10	5	—	5	—	—	10	—	5	5	5	—	5	5	5
Ether, amyl-acetic	—	—	—	—	4	—	—	20	—	—	1	—	2	1	—	—	3
Ether, amyl-butyric	—	1	—	—	4	—	—	—	—	—	—	—	—	10	—	1	2
Ether, amyl-valerianic	10	—	—	—	8	—	—	—	—	—	—	—	—	—	—	—	—
Ether, benzoic	—	—	5	5	—	1	—	—	—	—	1	—	—	—	—	1	—
Ether, butyric	—	10	—	—	—	—	—	—	—	4	1	5	1	5	2	1	5
Ether, formic	—	—	—	—	—	—	2	—	—	1	1	5	—	—	1	1	1
Ether, methyl salicylic	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	1	1
Ether, nitrous	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1	1
Ether, œnanthic	—	1	—	1	—	—	10	—	—	—	—	—	—	—	—	1	—
Ether, sebacylic	—	—	—	—	—	—	—	—	—	10	—	1	—	—	—	1	—
Ether, valerianic	—	5	—	—	—	—	—	—	—	5	—	5	—	—	—	—	—
Glycerine	4	4	—	3	—	—	10	—	5	3	10	5	2	3	8	4	2
Oil, lemon	—	—	—	—	—	—	—	0·1	10	—	—	—	—	0·1	—	—	—
Oil, orange	—	—	—	—	—	—	—	0·2	—	—	10	—	—	0·2	—	—	—
Oil, peach kernel	—	—	2	—	—	—	—	—	—	—	—	5	—	—	4	—	—

The table figures indicate parts by measure for 100 parts of rectified spirit (in the original formulas the parts of acid were to be taken as saturated alcoholic solutions of such acids). Cherry, currant, raspberry, and strawberry essences are coloured with aniline red (fuchsin), a little caramel being added to neutralise the bluish tint. Raspberry and strawberry essences are much improved by the addition of 10 to 20 per cent. of tincture of orris-root. Jargonelle, cider, pineapple, lemon, orange, and pear essences are coloured with saffron. Other fruit essences are made by the subjoined formulas :—

Banana

Essence of pear	℥ij.
Butyric ether	℥ij.
Oil of lemon	ʒiiss.
Ethyl benzoate	℥ss.
Tincture of orris to	Cong. j.

Mix and filter.

Gooseberry

Oil of lemon	ʒiij.
Butyric ether	℥j.
Spirit of chloroform	℥j.
Amyl acetate	℥ij.
Acetic ether	℥ij.
Tincture of orris to	Oiv.

Mix and filter.

Greengage

Aldehyde, butyric ether, amyl acetate, and œnanthic ether, of each	℥ij.
Acetic ether	℥iv.
Tincture of lemon	Oj.
Rectified spirit	Ov.
Water to	Cong. j.

Mix.

Grenadine

Oil of orange	℥j.
Œnanthic ether	℥ij.
Butyric ether	℥ij.
Essence of vanilla	℥xij.
Water	Oj.
Rectified spirit to	Cong. j.

Mix.

Damson

Essence of grape	Oj.
Essence of plum	Oiij.
Caramel	℥ss.
Tincture of saffron	℥ij.

Mix and filter.

Nectarine

Essence of pineapple	℥iss.
Oil of lemon	℥iij.
Essence of vanilla	℥iij.
Rectified spirit to	Cong. j.

Mix and filter.

Pistachio Nut

Oil of orange	ʒvj.
Amyl acetate	℥iv.
Oil of bitter almonds	℥v.
Butyric ether	℥v.
Acetic ether	℥ix.
Rectified spirit	Cong. j.
Water to	Cong. iss.

Mix.

Prune

Oil of wintergreen	ʒij.
Oil of lemon	ʒvj.
Amyl acetate	℥j.
Butyric ether	℥ij.
Essence of vanilla	℥x.
Rectified spirit	Ov.
Water to	Cong. j.

Mix.

Noyeau

Oil of petitgrain	℥ss.
Oil of bitter almonds	℥iiss.
Rectified spirit to	Oj.

Mix.

Red Currant

Essence of raspberry	℥x.
Cochineal colouring	℥j.
Tincture of orris	℥v.
Rectified spirit	Oij.

Mix and add

Red-currant juice	Ovj.

Mix.

Walnut

Aldehyde	℥ss.
Oil of bitter almonds	℥j.
Œnanthic ether	℥j.
Essence of vanilla	℥viij.
Tincture of orris	℥xvj.
Rectified spirit to	Cong. j.

Mix.

Note.—These essences are all the better for being set aside for a few months, then filtering.

Artificial Vanilla Essence.—Now that synthetic vanillin is obtainable at a cheap rate, old-fashioned substitutes for vanilla are little needed, but it may not be unprofitable to mention that an artificial essence can be made from Tonka bean and Peru balsam. The following are the manufacturers' directions for making vanillin sugar :—

Dissolve 3½ oz. of vanillin crystals in 17 oz. of rectified spirit and add to 9 lbs. of finely powdered white sugar, stirring gently during the mixing. Let the sugar dry in the open air in an earthenware vessel, sift, and keep it in closed tins.

This quantity of Vanillin Sugar is said to be stronger and have a finer aroma and taste than the same weight of vanilla beans, and may be used in the same way as the latter.

For Liqueurs and Alcoholic Solutions vanillin will be found invaluable. It imparts a delicious bouquet to all preparations so treated. One grain per gal. for alcohol, ½ gr. per gal. for brandy, is recommended. For liqueurs the quantity is regulated according to taste and requirements. *See also* page 177.

FOOD-PRESERVATIVES

The preservation of food is still to a large extent an empirical practice, so far as one can judge from the sale of preservatives, for in some cases the articles used to-day are the same as were used by our grandfathers in days when bacilli and microbes were unknown. On the other hand the sale of preservatives has enormously increased since Pasteur conclusively demonstrated that spontaneous generation is fallacious, and that floating matter in the air is the cause of decay and putrefaction. The new trade is in new products, the most notable being boric acid, formaline, salicylic acid, and the acid sulphites of alkali and earth bases.

A Departmental Committee appointed by the Board of Agriculture (Great Britain) has made (1901) the following recommendations in regard to the use of preservatives and colouring-matters in foods :—

(1) To prohibit formaldehyde entirely.

(2) To limit the quantity of salicylic acid to 1 gr. per pint or pound of food.

(3) To prohibit the addition of colouring or preservative to milk (making such action an offence under the Sale of Food and Drugs Acts).

(4) That only boron preservatives may be added to cream in amount not exceeding 0·25 per cent.

(5) The same preservatives be permitted for butter, but not exceeding 0·5 per cent.

(6) To prohibit preservatives in infants' and invalids' dietetic preparations.

(7) To prohibit the use of copper in preserved foods.

(8) To form a court of reference or give more power to the Local Government Board to exercise supervision over the use of preservatives and colouring-matters in food.

A word as to the action of preservatives. Some owe their influence to a purely neutralising effect. For example, if milk be rendered distinctly alkaline with bicarbonate of soda it keeps without curdling for two days, and this circumstance is largely taken advantage of by milk-sellers. Here the action of the lactic bacillus is not affected, but the first results of that action, whereby lactic acid is set free, are neutralised, and as curdling of milk is the direct result of a certain percentage of lactic acid, this point is not allowed to be reached when the bicarbonate is used. But we cannot call bicarbonate of soda a true preservative or antiseptic. To that class boric acid belongs because it is a decided bactericide, and it—or any other tasteless, odourless, and harmless substance which, when added in small quantity to food, prevents the changes due to bacterial life—is an adequate adjunct. There are comparatively few chemical substances which are not preservatives more or less. For example, nearly all the chlorides and sulphates of the alkalies and earths are decidedly efficient bactericides, their power varying ; but whether the variation accords to any law or not has not yet been sufficiently determined. Between these and the most powerful of antiseptics—viz., mercuric chloride—there is a multitude of substances which are of proved value, but the utility of which is determined by the characteristics of the antiseptics themselves. Comparatively few antiseptics are adapted for use in the preservation of food and liquors. These are borax and boric acid, salicylic acid, acid sulphites or sulphurous acid, formalin, nitre, and a few others of less importance. In the section on disinfectants (page 341) will be found some notes on the relative power of various substances.

Boric Acid as a Preservative.—Although it has been experimentally proved that boric acid alone is more effective as a bactericide than a mixture of boric acid and borax, there are few popular preservatives of this class which are not mixtures such as that indicated. The pure acid should in preference be used for Preserving Butter, the directions in this case being to mix a dessertspoonful of the powdered acid (say 1 oz.) with 4 to 8 oz. of common salt, and knead this into 14 lbs. of fresh butter. The quantity of salt to be used depends upon the length of time the butter is to be kept. Most of the foreign fresh butter imported into England contains boric acid. For Preserving Fish a mixture of the acid $\frac{3}{4}$ lb. and common salt $1\frac{1}{2}$ lb. is enough for 1,000 herrings, and other fish proportionately. For Preserving Butchers' Meat the acid alone is not so efficient as the mixtures afterwards referred to. As to Milk Preservation the use of bicarbonate of soda may first be noted. Dairy farmers use the bicarbonate by rule of thumb, sometimes adding too little or too much of the alkali; and to obviate that Mr. Stokes has suggested a test with compressed tablets, each of which represents so much lactic acid (0·1 per cent.) when added to a certain quantity of milk. One part of bicarbonate of soda almost neutralises 1 part of lactic acid. Perfectly fresh milk is not acid, but it contains the *Bacillus acidi lactici*, which begins its work immediately the milk is drawn from the cow, and in forty-eight hours produces sufficient acid (1 per cent.) to coagulate the milk at the normal temperature. It is unnecessary to anticipate this degree of acidity, for in practice a teaspoonful of bicarbonate of soda to 10 gals. of fresh milk suffices for its preservation. It should be noted that this addition is objected to by some medical men, it having been asserted that the lactate of soda formed is provocative of diarrhœa in children. Lactic diarrhœa is well recognised, but it is a question if this is not due to the ptomaines of fermentation, for small doses of potassio-mercuric iodide cure it, and this points to ptomaine-poisoning. There are many forms of the Boric-acid Preservative, but the following two recipes are typical and reliable :—

Boric acid . . .	4 parts	Boric acid . . .	3 parts
Borax	4 parts	Bicarbonate of soda .	1 part

Mix the powders, and allow to stand for twenty-four hours in the air, when they become damp. Dry and powder.

The following is a suitable label to use :—

MILK, CREAM, BUTTER, AND FOOD PRESERVER.

Prevents Sourness in Liquids.—Prevents Taints in Provisions.

DIRECTIONS.

To prevent Milk and Cream from turning sour in hot, close, or thundery weather, one dessertspoonful placed at the bottom of the pail before milking is commenced will be sufficient for three gallons—the milking will rapidly and thoroughly dissolve it ; for a pint of milk a pinch may be used.

For Butchers' Meat or Fish, paint over with a Solution (a tablespoonful of Preserver dissolved in a pint of water), or wrap in cloths that have been dipped in the Solution, and wash off before cooking.

The Preserver should be used in the same way for Game, Poultry, Rabbits, &c., preserving them for several days in the hottest weather. Butter and Eggs should be covered with a Solution (a teaspoonful of Preserver to a pint of water).

To preserve Butter for winter consumption, three tablespoonfuls of the Preserver and six tablespoonfuls of salt should be well beaten into every fourteen pounds of Butter. Then press the Butter into an earthenware vessel, glazed inside, and cover it with a solution of six tablespoonfuls of Preserver and twelve tablespoonfuls of Salt, in one gallon of water.

To prevent Sourness in Liquids use the Preserver in the same proportion as ordered for milk.

For Preserving Eggs we have obtained better results by immersing the eggs for six hours in the following solution :—

Salicylic acid	℥j.
Borax	℥x.
Hot water	Cong. x.

Dissolve and cool.

This solution gives eggs the buff colour so characteristic of winter 'new-laid eggs,' but is the better for the addition of a little annatto. A bath of melted paraffin is also good for preserving eggs ; so is hot milk of lime—both acting, doubtless, by destroying surface bacteria and coagulating a thin layer of the albumen inside the shell. Another good old plan is to dissolve an ounce of cream of tartar in a gallon of boiling water, and add 2 oz. of slaked lime. Set aside until cold, and put the eggs in the clear solution, where they are to be kept until wanted.

Salicylic Acid.—The following solution is the handiest form for exhibiting the acid as a preservative for meat and beverages :—

Acetic acid	℥j. ʒv.
Salicylic acid	℈xx.
Carbonate of potash	℥j.
Glycerine	℥iij.
Water to	℥x.

Add the carbonate to the acetic acid and form a neutral solution ; to this add the salicylic acid and the glycerine, dissolve, and make up to 10 oz. with distilled water. Add 10 drops of caramel and filter.

Each fluid drachm of this solution contains 5 gr. of salicylic acid. From one to two teaspoonfuls of it may be added to each gallon of beer, syrup, or other liquid. For brushing meat use a mixture of a teacupful in a gallon of water.

The following is a summary of directions for the use of salicylic acid formerly issued by Dr. F. von Heyden's Chemical-works :—

> **Taint on Meat, Poultry, and Game** can be removed by either watering and washing the meat in a lukewarm solution of salicylic acid (3 to 4 teaspoonfuls of acid to 2 quarts of water), or by adding a small pinch of the dry acid in powder during the cooking.
>
> To keep meat from becoming high or tainted for several days : Place it for twenty or thirty minutes in an aqueous solution of 1 oz. of salicylic acid to 1 gal. of water. Rub into the surface of

the meat some dry salicylic acid, particularly about the bony and fatty parts; the meat to be afterwards cleaned before cooking.

Milk.—A third of a teaspoonful (or, if the weather is very warm, a little more) of the acid to each quart of milk delays curdling for thirty-six hours.

Butter, washed with an aqueous solution (½ oz. of acid to a gallon of water), or kept in it, or wrapped in cloths soaked in this solution, keeps fresh for a very long time. Butter already rancid can be improved by treatment with a solution, 1 oz. of acid to 1 gal. of water, followed by washing in pure water.

Jams, Jellies, Preserves, and Pickles of every description, made in the usual way, but with the addition of about 1 dr. of salicylic acid to every 4 lbs., keep sound longer than usual, fermentation and mouldiness being prevented.

Eggs can be kept for a long time by being placed for half an hour in a cold weak spirit-solution of the acid, then allowed to dry in the air, and kept in a cool place.

Meat-preservers.—Many proprietary preparations are sold for preserving butchers' meat, especially in the summer time. Some of these are simply solutions of calcium bisulphite, sodium bisulphite, or potassium metasulphite. The first named is most used, and is obtainable from chemical manufacturers by the gallon. But there are also solutions and powders which are generally innocent of sulphurous acid, as shown by the following formulas based upon analyses made by the chemists of the Imperial German Health Office:—

Barmenit

Borax	of each equal parts
Common salt .	

Mix.

Berlinit

Borax	℥x.
Boric acid . . .	℥j.
Common salt . . .	ʒvj.

Mix.

The following abbreviated directions for the use of barmenit will show how these things work:—

To preserve **Meat**, rub its surface with barmenit, applied by means of a fine sieve. Take ½ lb. of barmenit to 100 lbs. of meat. Very large pieces are injected with 2-per-cent. solution before treatment as above.

Chopped and Sausage Meat is preserved by adding ½ lb. of barmenit to every 100 lbs.

Livers, Tongues, Kidneys, Hearts, &c., are treated like fresh meat; to preserve them for a longer period put them into the above-mentioned solution.

Gut remains perfectly odourless and fresh when salted with a mixture of 80 parts of salt and 20 parts of barmenit.

Dressed Poultry is rubbed with barmenit inside, and some of it introduced into the throat.

Fish is salted with 80 parts of salt and 20 parts of barmenit well mixed together ; or, if not to be salted, rubbed outside with barmenit and injected inside with the solution.

Roast Meat and Fish of every description for use at hotels and restaurants are kept fresh by adding to every 4 oz. of salt 1 oz. of barmenit.

Butter is preserved by kneading it well with $\frac{1}{2}$ per cent. of barmenit alone or with 1 per cent. of salt.

Milk is kept fresh for several days by adding $\frac{1}{4}$ per cent. of barmenit dissolved in a little hot water.

Fruit, Jams, Jellies, Cream, &c., require an addition of $\frac{1}{2}$ per cent. of barmenit ; wine and beer $\frac{1}{10}$ per cent.

Australian Salt

Borax	℥xvij.
Common salt . . .	℥j.

Mix.

Berlinit Pickle

Common salt . . .	lb. iij.
Nitre	lb. ij.
Boric acid . . .	lb. j.

Mix.

China Preserving-powder

Common salt . . .	lb. iss.
Boric acid . . .	lb. j.
Sulphite of soda . .	lb. ij.

Mix.

American Ham-preserver

Alum	℥viij.
Nitre	℥iij.
Water	Cong. j.

Dissolve.

Nitre is used for making meat or hams red. Of the above pickles use $1\frac{1}{2}$ lb. for 1 cwt. of meat. This is replaced in such articles as Preservaline by a red colouring matter. Preservaline is a mixture of equal parts of borax and common salt, sufficient of a rosaniline colour being added to give it a cherry tint. The disadvantage of nitre is that it makes the outside of the meat hard, while borax or boric acid produces a quicker cure.

Any of the foregoing compounds may be used for sausages, but it is apparent that they owe their efficacy to the boric radicle.

The Bacon-preserver commonly used in England is a solution of boric acid 5 lbs., salt 55 lbs., saltpetre 5 lbs., and sugar (in winter only) 5 lbs. in 20 gals. of water. The rich colour of Wiltshire bacon is due to saffron, an infusion of which is brushed over it before marketing.

Formalin is a 40-per-cent. solution of formic aldehyde, and is put upon the market by Schering's Chemical-works. Formic aldehyde, or formaldehyde, is more strongly antiseptic or bactericidal in vapour than in solution, and there appears to be a great future for it as a disinfectant of sick-rooms. It is now largely employed by dairymen for preserving milk. One teaspoonful of formalin suffices to keep 10 gals. of milk perfectly sweet for three days in hot weather. Fresh meat may be preserved by putting a few drops of formalin in the dish and placing a good-fitting cover over it; or the surface of the meat may be rubbed with a cloth damped with formalin. Fuller directions for the use of formalin may be obtained from the makers or their agents (A. & M. Zimmermann).

Fresh Fruit is Preserved in jars by means of chloroform. A thoroughly clean glass jar is selected for the purpose. A few drops of chloroform are placed on the bottom, then some cotton-wool and a layer of the fruit, more wool and fruit, and so on right to the top, more chloroform finally being put cn and the jar well closed. Soft fruits are not suitable for this method of preservation, and a great deal of the success depends upon the packing, for if there is undue pressure at any part the cellular tissue is bruised and the fruit spoilt. The chloroform simply provides an aseptic atmosphere round the fruit, but there is great difficulty in getting rid of the taste of chloroform, and formalin suits better. In the United States housewives regularly preserve apples, &c., every autumn by putting the pared and cored fruit into special fruit jars and filling the jars with hot thin syrup.

CLEANING-MATERIALS

The trade done by chemists and druggists in the kinds of household goods which we classify under this heading is by no means unimportant, and it is worthy of greater attention. The preparations do not, as a rule, call for that degree of artistic finish which one has to put on toilet articles, but it would be folly to exhibit slovenliness in any article, however humble its use may be. A little enterprise is also possible in this department. For example, the traditionary bugbear, spring cleaning, may be taken advantage of by issuing a circular in which hints are given about cleaning. The subjoined paragraphs may assist in drawing up such a circular.

The Chemistry of Cleaning.—The following brief hints regarding the removal of stains from cotton, silk, and wool fabrics may be useful:—

Acid-stains, if recent, can be removed by applying solution of ammonia; old stains are frequently removable in this way, but not if they have been done with nitric acid, which oxidises both material and dye.

Chrysarobin leaves nasty marks on linen. The fabric should be well washed to remove grease, and the spots dipped in Eau de Javelle and warm water alternately.

Coffee-stains.—Use Eau de Javelle in the same manner as above. Generally speaking, all stains produced by vegetable colouring matter can be removed with chlorinated-lime solution; but care should be taken not to use it too strong, else it will rot the fabric.

Condy's Fluid Stains, considering that they are due to manganese oxide, should come out with a dilute hydrochloric acid; but that fails as often as it succeeds. Urine never fails. Simply immerse the linen in urine for a quarter of an hour or more, and rinse in water.

Grease-stains.—If the articles can be washed the spots should be well rubbed with turpentine before the articles are sent to the wash, and a little ammonia solution should be put in the soaking water. Stains on tweed and other woollen cloth are often exceedingly difficult to remove, but benzine is about the best and cheapest liquid for treating the spots. Use it as directed on page 301. Stains on carpets should be well sprinkled with fullers' earth, then covered with a piece of brown paper, and a hot iron passed over the paper. Repeat, brush the spot well, and sponge lightly with ammonia solution. Turpentine is apt to make the stain spread.

Gunpowder-stains.—The bluish-black spots produced by gunpowder may be removed by painting with a solution of equal parts of iodide of ammonium and distilled water, then with dilute hydrochloric acid. This method is equally applicable to the skin and to fabrics.

Ink-stains.—Gall writing-ink can easily be removed from linen by applying Salt of Sorrel (1 part potass. binoxal. and 2 parts potass. bitart.) to the damped spot, then dipping in water. The stains, especially of blue-black ink, are more difficult to remove from tweed, the cloth often shrinking in the process, so that the last state is worse than the first. After treating with salt of sorrel the spots should be dipped in weak Eau de Javelle and then in warm water. Marking-ink (silver) stains should, after washing, be painted with tincture of iodine, then, after standing all night, dip the spots in solution of potassium cyanide or sodium hyposulphite. Aniline marking-ink stains are more refractory. To remove them first wash well in water containing a tablespoonful of ammonia solution to the gallon, rinse in warm water, and spread over a basin of the same. Prepare a solution of nitro-muriatic acid by heating ½ dr. each of nitric acid and hydrochloric acid in a test-tube for a few seconds until action begins. Dilute with 2 oz. of water. Brush this on the spots, dipping the linen in the basin after each application. Should this fail try Eau de Javelle. The variable composition of aniline marking-ink makes chemical treatment an uncertainty. Fresh spirit of nitrous ether sometimes removes the spots.

Iron-rust.—Treat with salt of sorrel as for ink-stains. If refractory place the moistened fabric on a bright polished warm iron, then rub on the salt of sorrel. The hydrogen disengaged by the acid helps to 'soften' the iron-rust by reducing it.

Milk-stains are due to the fat of the milk, and are treated as for grease.

Oil and Paraffin Stains.—Treat as for grease with benzine.

Prussian-blue Stains.—Wash out with weak solution of potash or soda and warm water.

Paint-stains.—Rub lightly with spirit of turpentine.

Tar-stains.—Rub with a little butter, and after a few minutes sponge off with spirit of turpentine.

Varnish-stains.—Treat as for paint-stains.

Wax-stains always yield to spirit of turpentine.

Those who wish to get particulars of the *modi operandi* of cleaning clothing should read Brannt's 'Practical Scourer and Garment Dyer,' published in England by Sampson Low, Marston & Co. (Limited).

Of the stains above mentioned the most profitable to chemists and druggists are those produced by oils, greases, paints, &c.

The removal of grease-spots from clothing can seldom be perfectly accomplished—indeed, if the stains are of long standing this is practically impossible; but it is easy to give the surface a clean appearance, and this is all that customers wish as a rule. The best solvents for oils are ethereal liquids, such as benzine, chloroform, and some of the petroleum spirits, such as apothartikon and autoline. The French have made the petroleum spirits popular, and they are much used on the Continent, a relatively large quantity being given for the money—8 oz. for 1*s.*—while with us 2 oz. of benzine for 6*d.* is the regular price, subject to the usual 'cutting.' It matters little which is used, and the directions may be the same for all. As an improvement upon ordinary benzine the following Perfumed Benzine is worth attention :—

Benzine	Oj.
Oil of lavender	ʒj.
Bichromate of potash	℥j.
Sulphuric acid	℥j.
Water	Oj.

Dissolve the bichromate in the water, add the acid, and when the solution is cold shake up the benzine with it. Shake every hour during the day, allow to stand all night, decant the benzine, wash with a pint of water, and again decant. Add the oil of lavender, and put up in 2-oz. bottles.

This benzine has a pleasant odour, and sells readily. The following label should be used for it :—

PERFUMED BENZINE.

For Cleaning Silk, Cloth, Woollen and Cotton Goods, Tulle, Lace, Gloves, &c.

Unlike many other cleansing solutions, this cannot possibly cause any injury to even the most delicate fabrics.

DIRECTIONS FOR USE.

The material to be cleaned should be laid on several folds of clean blotting-paper or linen, the stain should be covered with a few drops of the benzine, and when the stained portion of the fabric is perfectly soaked with it some dry powder, such as fullers' earth or magnesia, is sprinkled over it and pressed firmly. After a few minutes shake off the powder and wipe the spot either with a linen rag or with bread, and lastly brush. If the stain be not entirely removed by this treatment, the operation should be repeated.

Tulle or Lace may be dipped in the benzine twice, and dried by spreading on a clean napkin on a table.

Coats, Jackets, &c., may be cleaned by wiping them a few times with a sponge wetted with the benzine.

Gloves should be put on the hand, buttoned, and the stains rubbed with a sponge wetted with the benzine. The gloves are then taken off and dipped once or twice in a saucer filled with the benzine, and dried with a clean napkin. Then hang them by a thread through the button-holes to dry in the air.

N. B.—Keep the benzine away from the fire and gas.

Another article of similar application is Lightning

Cleanser, which is one of a large group of preparations now to be mentioned. The formula for the cleanser is

Castile soap	℥iv.
Boiling water	Oij.

Dissolve and add when cold

Strong solution of ammonia	℥viij.
Ether	℥ij.
Rectified spirit	℥iv.
Oil of citronella	ʒss.
Water to	Cong. j.

Mix. [Dissolve the oil and ether in the spirit.]

The following label shows the applications of this preparation :—

LIGHTNING RENOVATOR.

An Invaluable Household Requisite.

Removes Stains from all kinds of Woollen Goods. Brightens Black Clothes. Renovates Carpets, &c.

DIRECTIONS.

To Remove Grease-spots from Clothes.—Spread the part with the stains upon a table, putting a folded towel below the spots ; then rub in the renovator in a circular direction by means of a sponge.

To Brighten Black Clothes.—Sponge the whole of the garment equally with the renovator, first having removed any stains as above directed. Then hang out in the open air to dry, and iron if necessary.

To Renovate Carpets.—After thoroughly switching the carpet, or relaying after beating, take a stiff brush, such as a fibre scrubbing-brush, and apply the renovator over the whole surface, rubbing the stained parts hard. Finish off with a damp washing-cloth.

To Clean Flannels.—A teacupful of the renovator to be mixed with 10 gals. of water. In this mixture steep the flannels all night, and it will be found that they wash with ease next morning.

For Cleaning Paint.—Add a teacupful to a pailful of lukewarm water.

To Clean Windows.—Mix 1 part of the renovator with 5 parts of plain water.

The same directions apply for the preparations described on page 303.

The following are improvements upon the foregoing:—

I

Oleate of ammonia . .	℥ij.
Solution of ammonia .	℥ij.
Ether	℥j.
Benzine	℥v.
Chloroform . . .	℥j.

Mix the solution and oleate; shake well and add the ether; shake, and add 5 oz. of benzine; agitate thoroughly. Then add 1 oz. of chloroform and shake well. Allow to stand a few minutes and shake at intervals, when a mixture having the consistency of cream and showing but little tendency to separate will result.

II

Liq. ammon. fort. . .	℥j.
Sapon. mollis . . .	ʒvj.
Sodii carb. . . .	ʒij.
Sodii biborat. . . .	ʒij.
Æther. methylat. . .	℥j.
Spirit.	℥j.
Aq. ad	Oij.

M.

Benzine Jelly

Tincture of quillaia (1 in 5 S.V.T.) . . .	℥iss.
Benzine to . . .	℥viij.

Shake for thirty minutes almost continuously, then set aside to solidify, which happens in about twelve hours.

Washing-liquor.—Under this name have become popular various preparations in which turpentine and ammonia are the more important ingredients. When a small quantity of the liquor is added to a copperful of clothes the turpentine is vapourised during the boiling, and, together with the ammonia, has the effect of 'loosening the dirt,' to use a vulgar phrase. Ammonia alone is almost as efficacious, and is slowly displacing the terebinthinate preparations.

I

Yellow soap . .	½ lb.
Turpentine . .	8 oz.
Strong solution of ammonia . .	20 oz.
Water . . .	1 gal.

Shred the soap, and dissolve it in ½ gal. of the water by heating. With a pint of this when cold emulsify the turpentine, add the rest, shake well, then the ammonia and the remainder of the water.

II

Primrose soap . . .	4 oz.
Borax	½ oz.
Turpentine . . .	10 oz.
Strong solution of ammonia . . .	10 oz.
Water to . . .	80 oz.

Prepare in the same way as No. 1.

The turpentine may be omitted.

There are many more preparations of the same kind, but they are simply modifications of these two recipes.

Household Ammonia

Yellow soap . . .	℈ss.
Borax	ʒj.
Lavender-water . .	♏xx.
Strong solution of ammonia	℥vj.
Distilled water to . .	℥xx.

Dissolve the soap and borax in 5 oz. of boiling *distilled* water; when cold add the lavender-water and ammonia, and make up to a pint with *distilled* water.

Oleate of Ammonia

Oleic acid . . .	℥j.
Spirit	℥j.
Solution of ammonia .	℥vij.
Distilled water to . .	℥xvj.

Pour the acid into a bottle; mix the spirit and ammonia, and pour into the bottle. Cork tightly, and allow to stand a week or more until saponification is complete.

The following is the encomium which generally accompanies 'Household Ammonia':—

> Liquid Ammonia acts like a charm on hard water, softening it, and rendering it pleasant to the touch, and almost doing away with the need for soap. Curds, which mean a loss of soap, are entirely prevented, and washing becomes a luxury.
>
> For laundry purposes it is invaluable; clothes left to soak overnight in water, with a little of this Ammonia added (a teaspoonful to each gallon), can be cleansed more readily and with much less labour and soap than if washed in the ordinary way.
>
> Woollens and flannels treated by this method need less rubbing, and are not so liable to shrink.
>
> For removing grease and dirt from clothing, and all textile fabrics, Ammonia will be found much better and cheaper than soap. Carpets, and similar goods, if sponged with it, are made to look like new.
>
> For cleaning silver or plated goods, no matter how tarnished, it is excellent, and when once tried will always be used for this purpose.

OTHER LAUNDRY PREPARATIONS

Soap Powders.—The best soap to use for making these is one made from of equal parts of tallow and cocoa-nut oil. The soda is 90 per cent. alkali or the best crystal carbonate. The subjoined formulas are intended for extemporaneous mixing, but it is important to note that the best soap powders in the market are not so made, but in the following manner, viz.:—The soap (in thin slices) is put into a steam-jacketed pan containing at least its own weight of water. When nearly all melted put in a small quantity of the soda, which helps to make the last of the soap melt more readily. Then introduce the remainder of the soda, and keep the whole well stirred until completely dissolved. The mixture is next transferred to a shallow table, about six inches deep, made of galvanised iron nailed to a wood frame and set in a place where there is a draught. While the mixture is run on to the table keep crutching it to prevent separation, and continue crutching from time to time until the mixture has become quite thick. It may then be left a day or two, when it will be hard and ready to be broken up. By continuing the crutching for a considerable time, the 'extract' gradually falls into a powder. But the better plan is to allow the mixture to become solid, and at the end of the two days to break up the mass and grind to powder in a mill or disintegrator. Any other ingredients of the powder, such as borax and silicate of soda, must be introduced during the crutching stage. The whitest soap powder is obtained by using crystal carbonate of soda, and a cocoanut-oil soap is essential for getting the peculiar odour which soap powder has.

Borax Soap Powder

Soap	5 lbs.
Soda	3 lbs.
Silicate of soda . .	2 lbs.
Borax	1 lb.

Mix.

London Soap Powder

Soap	6 lbs.
Soda	2 lbs.
Pearl ash . . .	1 lb.
Sulphate of soda . .	1 lb.

Mix.

Pearl Soap Powder

Soap	4 lbs.
Soda	2 lbs.
Silicate of soda . .	1 lb.

Mix, dry, and powder.

Chemical Soap Powder

Soap	1 lb.
Soda	1 lb.
Borax	1 lb.
Eucalyptus oil . .	1 dr.

Mix.

Bleaching-liquids.—Good business can be done in these by judicious pushing. On the Continent the sale for them is large; here it is limited. The B.P. Liq. Calc. Chlorinat. is as good as anything for the purpose, but the following are the popular liquids:—

Eau de Javelle

Chlorinated lime . .	℥iij.
Pearl ash . . .	℥iij.
Water	Oiv.

Mix the lime with Oiiiss. of water, and dissolve the pearl ash in the remainder; mix, and after a few days filter, adding ʒij. of hydrochloric acid to the filtrate.

Eau de Labarraque

Chlorinated lime . .	℥v.
Washing-soda . .	℥x.
Water	Ov.

Mix each solid with half the water, mix the solutions, allow to stand a day, and filter.

Wilson's Bleaching-liquid is said to be a solution of chlorinated lime to which alum is added in sufficient quantity to precipitate the lime. Sulphate of magnesia is used in the same way in other cases. Parozone is a similar preparation.

Laundry Blue.—Chemists take too little advantage of the enormous demand there is for laundry blue. A good blue may be made from a mixture of Chinese blue and oxalic acid. Chinese blue is simply a superior Prussian blue, which forms a perfect solution with half its weight of oxalic acid and a sufficiency of water. The blue mixture consists of 2 parts of Chinese blue and 1 part of oxalic acid, both in powder. Put this up in ½-oz. packets (to retail at 2*d.*) and label :—

> **LAUNDRY BLUE POWDER—POISON.**
>
> Place the contents of this packet in a basin, and pour a little boiling water upon it, stirring all the time, so as to form a cream. Then add sufficient cold water to make a pint of liquid, and bottle.

The only objection to this blue is that it cannot be used universally, because with some waters and washings it gives flecks, which are highly objectionable. It is in such cases that Thumb Blue gives so much satisfaction. This blue is a mixture of pipeclay and a special make of ultramarine.

Thumb or Table Blue

Superfine ultramarine	℥iv.
Ordinary ultramarine	℥ij.
Sodium carbonate	℥iv.
Glucose	ʒix

Mix and make into a stiff paste by the aid of water, roll out into a thick sheet, and cut into cubes, which dry at a gentle heat.

Ultramarine is the fastest of the blues used for laundry purposes, because it is not affected by the hot iron. Indigo carmine gives equally satisfactory results, and may also be used in solution. The same remark applies to methyl blue, which has within the past few years also come into use for the same purpose. Most of the aniline blues have strong blueing properties and, as they are used in solution, they do not speck the clothes. Some are fast to acids and alkalies, others are fast to one but not to another. Some do not stand ironing, others do. The soluble, or cotton blues, are those most favoured. These are made in a great variety of tints, varying from a reddish blue, 3R, to a pure blue, 6B. Occasionally the methyl violets are used, especially the blue tints. Blackley blue is very largely used for laundry purposes, being faster than the soluble blues. A 1-per-cent. solution of this dye is strong enough.

Starch Glaze or Gloss.—The powder 'gloss' is the favourite in England, and generally consists of borax, alone or mixed with 2 oz. of potato starch to each pound of borax. A teaspoonful of this goes with each heaped tablespoonful of starch. There are other forms. The following is now popular :—

French chalk	℥iij. or ℥j., or none
Powdered white soap	℥j. or ℥ij., or quan. suff.

Mix.

This is put up in ʒj. packets to retail at 1*d.* with the following label :—

> DIRECTIONS.—Take a piece of new dry flannel and dip it into the glaze-powder ; rub it well over the right side of the starched article, then proceed to iron in the usual way, when a beautiful gloss will be obtained. Put in a little borax in making the starch to give stiffness as usual.

Liquid Starch Gloss is supposed by some people to be preferable to the solid. The following are the best forms :—

I

Spermaceti . . .	℥j.
Gum arabic . . .	℥j.
Borax	℥j.
Glycerine . . .	℥iiss.
Water	℥xivss.

Boil half the water and add the borax and spermaceti to it. Separately dissolve the gum in the remainder of the water and the glycerine. Strain and mix thoroughly with the warm mixture.

II

Glycerine . . .	℥ij.
Spirit of turpentine . .	℥ij.
Borax	℥ij.
Cold-water starch . .	lb. j.
Water	Ovj.

Rub down the starch with water to a smooth paste, then add the rest of the water in which the borax has been dissolved. Add the glycerine and turpentine last.

The first of these is a good gloss for cold-water starch ; a wineglassful of it is used with 4 oz. of dry starch, or, say, one tablespoonful to a heaped tablespoonful of starch. The second recipe is a domestic one, and the mixture is excellent for cold-water starching.

White wax, hard paraffin, stearine, and spermaceti are much used for starch glazing. About a drachm of any one of them is used with a tablespoonful of dry starch, the boiling water serving to emulsify this waxy substance. They are not available in this solid form for cold-water starching. In that case the following powder is useful :—

Spermaceti	℥j.
Borax	℥j.
Starch	℥iv.

Reduce the spermaceti to fine powder and mix with the borax and starch.

A teaspoonful of this goes with each tablespoonful of starch. A polish is sometimes imparted to shirt-fronts by rubbing the fronts with wax or paraffin after the iron has been passed over the linen once, but the highest polishes are only obtainable by the use of a polishing-iron.

Iron-rust Spot Remover

Cream of tartar	℥viij.
Powdered binoxalate of potassium	ʒviij.
Oil of lemon	♏x.

Mix.

Moisten the spot and rub with the powder.

Salt of Lemon.—The last-mentioned formula is substantially what is sold by many in the trade as salt of lemon, but some give pure sal acetos. How it came to be called 'salt of lemon' we have been unable to trace, but the change was effected some time between the seventeenth and the beginning of the nineteenth century. John Baptista Porta, who wrote about 1658, gives the following directions for making 'Salt of Lemmons' :—

> Distil the lemons with their peels and juice ; reserve the water, and dry the rest in the sun if the season permit it or in an oven. Put them in a pot close luted, and calcine it in *igne reverberationis*. Then dissolve the powder in the water, and boil them in a perfect lye ; cleanse it with a feather, that the dregs may settle to the bottom ;

> purify it and let the liquor evaporate, so that the salt will remain in the bottom; which is most excellent to break the stone in the bladder.

This salt would consist chiefly of phosphate of potash, a little carbonate, and probably citrate, and it was doubtless 'most excellent for stone in the bladder,' but how the same name came to be applied to binoxalate of potash preparations is a mystery. Ure stated in 1827 that 'essential salt of lemons' is superoxalate of potash. Gray (1828) gives it 'Crem. tart. 4 oz., sal. acetosellæ 8 oz.' As we have stated, however, many in the drug-trade give a mixture of sal acetos and cream of tartar, which, strange to say, is more effective than the sal acetos alone.[1] The remark on page 299 in respect to the use of the salt should be noted. We append here the formula (No. I.) generally used, also one (No. II.) for a non-poisonous salt:—

I		II	
Potass. bitart. . . .	℥xvj.	Potass. bitart. . .	℥xij.
Potass. binoxalat. . .	℥x.	Pulv. acid. citric. . .	℥xij.
Ol. limonis . . .	gtt. x.	Ol. bergamot. . .	gtt. x.
M.		M.	

---

[1] Gray's formula seems to give the origin of the use of cream of tartar in the salt. Many of the formulas printed in early editions of his 'Supplement' were 'wholesale.' At that time it was the exception to get a pure drug, adulteration being systematically practised, especially with such things as salt of sorrel. Brande, in his 'Manual of Chemistry' (1821), refers to 'salt of lemons (superoxalate of potash)' in the index, nothing being said about lemons on the page given; but it is stated that 'a salt . . . consisting of 4 proportionals of oxalic acid [and] 1 proportional potassa . . . is the *quadroxalate of potassa*, and is the salt which exists in wood sorrel.' In Henry's 'Elements' (1823) the binoxalate, and not quadroxalate as specified by Brande, is described:—'It may either be formed artificially or obtained from the juice of the *Oxalis Acetosella*, or of the *Rumex acetosa.* When procured in the latter mode it is sold under the name of *salt of sorrel*, or *essential salt of lemons.*' There were many 'essential salts' in the eighteenth-century Pharmacopœias. The Phar. Edin. directions for *sal essentiale acetosa* were substantially: 'Allow sorrel-juice to settle, decant, evaporate to one-third, strain into a glass vessel, cover the liquor with a little olive oil, set aside to crystallise, collect the crystals, wash slightly, and dry.' The oil was used to prevent fermentation of the juice by excluding the air. This salt was then an old remedy for stone and kindred troubles, and a salt of lemons was probably made from lemon-juice in this improved way. As far as we have been able to trace, Gray is the first to reveal that the trade article was mixed with cream of tartar.

The following miscellaneous formulas for cleansers have failed to drop into more suitable positions :—

Clothes-ball

Pipeclay	lb. ij.
Fullers' earth . . .	℥iv.
Whiting	℥iv.
White pepper . . .	℥ij.
Ox-gall	℥iv.

Make into a stiff paste with the aid of a little water.

Breeches-ball

Pipeclay . . .	lb. ij.
Bath-brick . . .	lb. j.
Pumice-stone . . .	℥iv.
Ox-gall	℥vj.

Reduce the solids to fine powder, mix with the clay, ox-gall, and a little water to a stiff paste. Colour with rose-pink, ochre, or umber.

Breeches-paste

(*Marquis of Lothian's Groom*)

Pipeclay	lb. j.
Spanish white . . .	℥viij.
Flake white . . .	℥vj.
Precipitated chalk . .	℥iv.
Spermaceti . . .	℥j.
Lard	℥viij.

Mix thoroughly, first melting the spermaceti and lard before adding to the mixed powders.

Egg Scouring-ball

Yellow soap . . .	℥viij.
Methylated spirit . .	Oj.
Yolks of eight eggs.	
Spirit of turpentine . .	℥ij.

Dissolve the soap in the spirit by the aid of a gentle heat, add the yolks and the turpentine, mix thoroughly, and form into a stiff paste with light carbonate of magnesia.

Glass-cleaner

Calcined magnesia made into a cream with benzine.

Gall-soap

(*For Removing Stains*)

Curd soap . . .	℥xxx.
Water	Oij.
Ox-gall	℥x.
Carbonate of soda . .	℥v.

Shred the soap and dissolve it in the water by heat, add the ox-gall and the soda (in powder), and evaporate until, on cooling a little of the soap on a marble slab, it solidifies. Pour into a tray to the depth of 1¼ inch, and when cold cut into suitable-size cakes.

Glove-cleaners

(*Ganteine*)

Curd soap . . .	℥j.
Water	℥iv.
Oil of lemon . . .	ʒss.
French chalk . .	a sufficiency

Shred the soap and dissolve in the water by heat, add the oil of lemon, and make into a stiff paste with the French chalk.

The oil of lemon and chalk may be omitted, and replaced by pulv. iridis subtilis.

(*Saponine*)

White soap . . .	℥xxv.
Warm water . . .	℥xv.
Eau de Labarraque . .	℥xvj.
Solution of ammonia .	℥j.

Shred the soap and melt it in the water by heat, stirring well all the time. When lukewarm add the other liquids and mix thoroughly well.

Directions for either of these : Put the glove upon the hand and apply the paste with a piece of flannel, rubbing the kid from wrist to tip of finger.

Soap for Cleaning Elastic Stockings

Pulv. saponis . . .	lb. ij.
Aquæ destillatæ . .	Oiij.

Dissolve the soap in the water, and when solution is complete allow to stand for two days, and add

Liq. ammoniæ . .	℥vij.
Spt. odorati[1] . . .	℥xxxiij.

Mix and put up in covered vessels.

Directions.—Dissolve ½ oz. of the soap in a quart of cold water, in which let the stockings steep for twenty-four hours; then remove and rinse well in cold water.

Carpet-soap

Fullers' earth . . .	℥iv.
Spirit of turpentine . .	℥j.
Pearl ash . . .	℥viij.

Rub smooth and make into a stiff paste with

Soft soap . .	a sufficiency

Window-cleaning Powder

Dried carbonate of soda .	℥ss.

Directions.—'Empty the contents of the box in 2 pints of clean hot water and shake for a few seconds; it is then ready for use. After the windows are thoroughly cleaned, sprinkle a few drops on a linen rag and cover therewith the whole surface of the window inside and out, and when dry rub lightly with a soft linen cloth. A fine polish will then be produced, and will remain undulled by condensed breath or any other moisture.'

For Cleaning Glassware

Powdered pumice-stone .	℥ij.
Oleate of ammonia . .	℥iij.
Solution of ammonia to make	℥xvj.

Shake before using.

Windows, to Obscure

I. Dissolve glue ½ oz. in water 20 oz. and make whiting into a paste with the glue-water. Daub the mixture on the glass with a cotton pad.

II. Paint the glass with a lukewarm saturated solution of alum or Epsom salt.

Marble-cleaner

Dried carbonate of soda .	℥ij.
Powdered pumice . .	℥j.
Chalk	℥j.

Mix and sift.

Directions.—Rub the powder, made into a cream with water, well over the soiled parts, and wash off with soap and water.

Marble-polish

Fine rotten stone, emery powder, and putty powder are used; marble-polishers use the last mentioned, making it into a thin paste with water and rubbing with thick felt or a pad of moleskin.

FURNITURE-POLISHES

Furniture-polishes may be roughly divided into three classes—creams, oils, and pastes. In the whole of them linseed oil, or wax, and spirit of turpentine are essential ingredients. It is not difficult to understand why this should be. The primary polish on furniture is a pellicle of resins, which on exposure receives a thin coating of dust, &c., and, it may be, the resin is partly saponified on the surface. Turpentine is one of the best possible things to remove these, while it so thins the linseed oil that rubbing is simplified, and the heat generated favours oxidation of the linseed oil, consequently, the formation of a new polished pellicle upon the original. There is no doubt that furniture-oils give the best polish, but unless they get much hard rubbing they leave a surface which shows finger-marks. For these reasons furniture-creams are much more popular than oils, really because there is less in them, although from the nature of their composition they are the best cleansing agents. For dull-polished furniture the pastes only should be used, as they sink little into the wood and give an excellent surface.

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[1] May be methylated spirit containing ol. ros. geranii ʒij.

The number and variety of recipes for furniture-polish are as perplexing as the why and wherefore of them. We know practically nothing about the principles upon which the recipes are based. There are strange ingredients in some of the preparations ; what good they are we cannot tell, yet if one of them be omitted an experienced polisher can detect the difference. Dr. John Attfield, F.R.S., once said that it was astonishing how much science could be made to flow from a bottle of furniture-polish. The remark was pertinent to a paper which had at the moment been read by Mr. R. H. Parker on the formation of terpine hydrate in a furniture-oil. The hydrate had scratched the furniture, and thus led to an interesting discovery and a study of the preparation and crystallography of terpine hydrate ; but Mr. Parker could not again make the furniture-oil with crystals in it. We shall not, therefore, venture to discuss the chemistry of the following compositions, particularly as it does not in the least explain their virtues.

Furniture-creams.—There is often want of success in compounding these saponaceous preparations, and this, we have found, is generally due to the use of 'beeswax,' consisting more or less of paraffin. Wax is only sparingly saponifiable, but the little of it which is saponified assists in the emulsification of the remainder. Furniture-creams are emulsions.

The best white wax to use is the Madras kind. Ceresine and paraffin are useless.

I

Best primrose soap	℥iiss.
Carbonate of potash	℥ij.
Water	Oij.

Dissolve by heating and add

White wax	℥xx.

Stir constantly until well mixed, then remove from the fire and add slowly, constantly stirring

Oil of turpentine	Oiv.

Mix well.

II

Castile soap	℥j.
Yellow wax	℥xvj.
White wax	℥j.
Spirit of turpentine	Oij.
Boiling water	Oij.

Melt the waxes on a water-bath and add the turpentine, stirring until the mixture is quite liquid. Separately dissolve the soap in the boiling water, and pour the two mixtures simultaneously into a hot earthenware jar. Stir for five minutes, and pour into wide-mouth bottles for sale.

These typify two methods of mixing; the essential difference is in the treatment of the wax. We prefer the second method, because when wax is dissolved in turpentine and added to an aqueous alkaline or saponaceous solution it emulsifies more readily. The objection to the second preparation is that it is thickish, but the same form exists with yellow wax in proportions of 4 oz. upwards.

III

Yellow wax	℥xvj.
Spirit of turpentine	℥xxx.

Shred the wax and steep in the spirit all night. Next morning place the jar containing it in a basin of hot water, and meanwhile prepare the following solution:—

Pearl ash	℥ij.
Soft soap	℥iv.
Hot water	Ovj.

Mix the two solutions by pouring the second gradually into the first, stirring briskly the while.

IV

Yellow primrose soap	℥vj.
Carbonate of potash	℥j.
Water	Oiij.

Dissolve by heat.

Resin	℥ss.
Yellow wax	℥viij.
White wax	℥iv.
Spirit of turpentine	℥xxx.

Powder the resin and shred the waxes. Dissolve in the turpentine as in No. III., and mix the two solutions in the same manner.

The fourth recipe is said to give a preparation like Adams's. Of the two following formulas the first is intended for cheap retail. The second is a highly spoken of American preparation.

V

Japan wax . . .	℥iv.
Oil of turpentine . .	℥xij.

Shave the wax and dissolve it in the turpentine, then add

Linseed oil . . .	Oiv.
Spirit	℥xij.
Solution of potash . .	℥vj.
Water to . . .	Cong. j.

Make into a cream by brisk agitation, diluting the potash with the water before adding it.

VI

Oleate of ammonia . .	℥ij.
Solution of ammonia .	℥ij.
Shellac varnish (1 in 8) .	℥vj.
Linseed oil . . .	℥vj.

Mix the solution and oleate, add the shellac, and shake well; then add the oil and shake thoroughly.

Furniture Oils and Polishes.—These are distinguished from the foregoing in not being creamy, and in containing comparatively little non-oleaceous ingredients.

FURNITURE POLISH.

Is claimed to be not only the most successful, but the most economical, Furniture Polish on the market, as the smaller the quantity used, the more lasting and brilliant is the polish produced.

Directions for Use.

Well shake the bottle, and pour a small quantity into a saucer, then with a piece of soft flannel or rag apply the polish with gentle friction. A light rubbing with a soft duster should now be given to ensure the removal of superfluous polish.

Neither of these operations is at all arduous, entailing far less labour than the ordinary furniture 'creams,' with which such brilliant results are not possible.

I

Linseed oil . . .	Oiv.
Tincture of benzoin .	℥iv.
Archil	℥ij.
Vinegar	℥xvj.
Solution of antimony chloride	℥vj.
Spirit	℥x.

Mix.

II

Linseed oil . . .	℥xx.
Spirit of turpentine . .	℥xij.
Solution of antimony chloride	℥j.
Vinegar	℥viij.
Methylated spirit . .	℥iij.
Camphor . . .	ʒij.
Sal ammoniac . .	ʒiij.

Dissolve the camphor in the spirit and the sal ammoniac in the vinegar. Mix the ingredients in the order of the recipe.

III

Dragon's blood . .	℥ss.
Oil of turpentine . .	℥vj.
Linseed oil . . .	Oj.
Hydrochloric acid . .	℥iss.

Powder the dragon's blood and shake well with the turpentine. After a day strain into the linseed oil and add the acid.

IV

Linseed oil	Oij.
Vinegar	℥vj.
Spirit of turpentine	℥iij.
Hydrochloric acid	℥j.
Spirit	℥ij.

Mix in the above order.

V

Linseed oil	℥viij.
Spirit of turpentine	℥viij.
Resin	℥j.
Spirit	℥j.
Nitric acid	℥ss.

Dissolve the resin in the turpentine, add to the oil, then add the spirit and acid.

VI

Linseed oil	℥xij.
Solution of antimony chloride	℥j.
Old ale	℥x.
White of two eggs.	

Mix the oil and the antimony, and separately the white of eggs and ale. Mix the two by brisk shaking.

The first four recipes are excellent. The fifth is the compound which forms terpine hydrate, due to the nitric acid, which should never go into polishes containing turpentine. The sixth is a favourite with publicans. The old ale is, of course, the equivalent of vinegar. 'Spirit' means methylated spirit used by permission obtained from the Board of Inland Revenue.

Furniture-pastes.—We quote four examples of these each being typical :—

I

Yellow wax	℥xiv.
Spirit of turpentine	℥xxxij.

Shred the wax and steep it in the turpentine overnight, then complete solution by putting the jar in a basin of hot water and stirring until the mixture is clear. Remove from the basin and stir occasionally until the mixture is creamy.

II

Ceræ flav. (in shreds)	℥iij.
Ol. terebinth.	℥xx.
Ol. lini	℥ij.
Rad. anchusæ	℥iss.

Digest the alkanet in the mixed oils, strain, melt the wax on a water-bath, and add the oils to it, constantly stirring.

III

Ceresine	lb. iij.
Spirit of turpentine	Oiv.
Resin	℥vj.
Vermilion	℥j.

M.S.A.

IV

Curd soap	℥j.
Water	℥x.

Dissolve by heat and add to the following, previously liquefied :—

Yellow wax	℥iij.
White wax	℥j.
Spirit of turpentine	℥iv.

Stir until of a creamy consistency.

It may be noted that ceresine is better than hard paraffin for furniture-paste ; but both are the better for the addition of resin, as without it the turpentine is apt to ooze out from the paraffin or ceresine. Alkanet is a better colouring than vermilion or red-lead.

METAL-POLISHING PREPARATIONS

Within the past dozen years a complete change has been effected in the preparations used for cleaning brass and other metals common in the household. In our early days oxalic acid and rottenstone were the universal metal-polishing agents. Now, it is with an apology that we include formulas for these old things in this book, as the new ones are distinctly superior. First of them, in point of time and popularity, came the soaps of Brooke's type, which are essentially a mixture of a fine fossil earth and soap, the latter in comparatively small proportion. The chief secret about these soaps is the source of the pulverulent materials which make up their bulk. Next came the German Putz-pomade (literally, polishing-ointment), in which ferric oxide and petroleum jelly are the principal ingredients, and this paved the way to quite a unique group of preparations which revealed to housewives the startling efficiency of paraffin as a metal-cleaning material. This, it is true, was known before, but the fact remains that the cleaning of metals is now a better understood art. It is well to note here that most metals used in the household become dull for two reasons : first, adhesion of greasy matter, which is always present in the atmosphere, especially that of towns ; and, second, oxidation of the metal. In the latter case we get on silver a distinct black coating of oxide of silver ; to a less extent oxide of copper is found on brass, and air and moisture together quickly rust bright steel goods. The old-fashioned way for restoring the bright surface was simply to rub off the dull part ; but the new preparations aim at dissolving the grease and oxide, thus enabling the polishing basis to work more easily and quickly. Even in days gone by this was appreciated. Thus, until a few years ago, it was claimed by the United States Arsenals that their method of cleaning brass was the best in the world; certainly it was efficacious, for it consisted in dipping the metal in a mixture of 2 parts of nitric acid and 1 part of sulphuric acid, which would completely remove the oxide, and with it much of the metal; then the articles were washed in cold water and rubbed with sawdust, whereby a brilliant polish was imparted. But it was necessary sometimes to dip the articles in a strong soda lye to remove grease before putting them in the acid bath. So, after all, the 'best method of brass cleaning in the world' was stupidly commonplace and shockingly wasteful. It may do for the brassfoundry, but not for domestic life.

There was little science in the old-fashioned Polishing-pastes. One of the most common formulas was:—

Oxalic acid	℥ij.
Soft soap	℥viij.
Sweet oil	℥viij.
Spirit of turpentine	℥j.
Rottenstone	lb. ivss.
Boiling water	℥xvj.

Dissolve the acid in the water, add the rottenstone, and finally the other ingredients.

The resulting paste contains little free oxalic acid, because the acid has too strong a liking for the potash of the soft soap. Nevertheless, the paste is not a bad one, and it will be noted that the free fatty acid which it contains is the starting-point in the more modern polishes. We commend the following recipes:—

I

Venice tripoli	lb. j.
Spanish whiting	lb. j.
Powdered pumice	℥viij.
Kerosene	℥iij.
Crude oleic acid	℥iv.

Crude petroleum jelly (soft) a sufficiency to make a paste.

II

Rottenstone	℥xl.
Soft soap	℥xx.
Oil of amber	ʒij.
Water	a sufficiency

Mix.

Perfume with oil of mirbane.

Putz-pomade may be white or red in colour. The powder basis of the former may be precipitated silica or elutriated kieselguhr, the silica being on the whole the better. The addition of 10 per cent. of ferric oxide serves to convert the white into red putz-pomade, but some fine preparations are made with tripoli.

I

Japan wax . . .	℥ij.
Crude oleic acid . .	℥x.

Melt and add

Precipitated silica . .	℥v.
Ferric oxide . . .	℥ij.

Both finely levigated. Perfume with oil of mirbane ♏x.

The wax may be increased to make a hard product.

II

Ferric oxide . . .	℥viij.
Paraffin wax . . .	℥ij.
Lubricating-oil . .	℥vj.
Oleic acid . . ,	℥j.
Oil of mirbane . .	ʒss.

Melt the paraffin wax with the lubricating-oil and mix with the ferric oxide, previously well levigated; add the acid and the oil of mirbane.

There is a growing tendency to make these preparations colourless, using for them natural white earths (not clays) which are found in various parts of the world. These earths are sometimes pure silica, and of a fossil nature, and when elutriated or sifted they are admirably adapted for the purpose. Such popular preparations as Brooke's soap and Pinka appear to have powders of that nature as their bases.

Putz Oil

Crystal white petroleum .	℥iv.
Crude oleic acid to . .	Oj.

Mix.

Liquid Putz

Levigated ferric oxide .	℥iv.
Oil of mirbane . .	♏xij.
Putz oil	℥xvj.

Mix.

Belgian Putz Powder

Carbonate of lead . .	℥xij.
Carbonate of magnesia .	℥ij.
Ferric oxide . . .	℥ij.
Precipitated chalk . .	℥xxx.

Mix.

Silver or Plate Powders.—Comparatively few powders have inherent chemical properties such as would effect a fresh deposit of silver upon the metal. There is a tradition that one powder is nothing more than a mixture of precipitated chalk and solution of cyanide of silver; but a powder of that kind is neither desired nor required for household purposes. Such articles are silver-platers, not silver-cleaners. For all practical purposes precipitated chalk alone or 4 parts of the chalk and 1 of heavy carbonate of magnesia make efficient plate-powders. A little colouring, such as ferric oxide, Armenian bole, or crocus powder may be added. Grey powder (hydrarg. c̄ cretâ) is also used, and 5 or 10 per cent. of it unquestionably gives a brilliant polish, but wears away the silver through amalgamation. Phosphate of lime in fine powder and precipitated silica also make excellent plate-powders.

I

Rouge	ʒss.
Heavy carbonate of magnesia	℥viij.
Light precipitated chalk	lb. j.

Triturate the rouge with 2 oz. of the chalk for five minutes, and gradually add the rest of the powders. Sift three times.

II

Rottenstone	℥j.
Heavy carbonate of magnesia	℥iv.
Phosphate of lime or precipitated silica	lb. j.

Prepare in a similar manner to No. I.

In putting these up it is advisable to mention in the directions that the powder should be made into a thin paste, with equal parts of household ammonia and water, as the alkali assists greatly in cleaning the plate. The following are combinations of powder and liquid :—

III

Precipitated chalk	℥ij.
Solution of ammonia	℥ij.
Methylated spirit	℥iij.
Water to	℥xx.

Mix. Tint with carmine if desired.

IV

Precipitated chalk	℥viij.
Spirit of turpentine	℥ij.
Spirit	℥j.
Spirit of camphor	℥ss.
Solution of ammonia	ʒij.

Mix.

The first of these 'liquids' we can vouch for as excellent. The second is a recipe which, under various names, has been 'going the rounds' for twenty years. 'Silverine' is one of its names, and it is said to be 'a most excellent liquid for renovating all kinds of silver, plate,' &c. Why turpentine and camphor should be used for cleaning silver we do not know ; nor should we care to use fruit-knives immediately after they had been treated with silverine. But that is not likely to happen, as the formula can, at the best, produce only a paste. We quote it as another example of the recipes which are thoughtlessly reproduced year after year. Some time ago we analysed a 'silverine,' which we found to consist substantially of the ingredients given in No. III. formula, with the addition of sufficient red oxide of iron to give a flesh tint. The label for it is as follows :—

SILVERINE.

A NEW PREPARATION

For cleansing and restoring Gold, Silver, Gilt, Plated, or Parcel-gilt Jewellery, Electro or Nickel Plated Wares, Polished Brass, &c., &c.

WARRANTED FREE FROM MERCURY.

Instructions for Use.

Well shake up, and use on a piece of cotton-wool, sponge, or soft cloth ; then rub off perfectly dry with wool, soft leather, or cloth. If for fancy work, apply as above and lightly polish off with a soft cloth. For Gold, Gilt, and Brass articles, dilute to half strength by adding water.

To be kept tightly corked when not in use.

Silver-polishing Paste

Pulv. cornu cervi . .	℥j.
Pulv. oss. sepiæ . .	℥j.
Cretæ præcip. . .	℥v.
Vaselin. liquid. .	℥v. or q.s.

Fiat pasta.

The solids should be in the finest possible powder, and a uniform paste should be made of the whole. Put the paste up in small tin boxes.

Silver-soap

Cocoanut-oil soap . .	℥v.
Water	℥vj.

Dissolve by the aid of heat and incorporate with

Prepared chalk . .	℥xvj.

Mould into cakes. If desired a few drops of oil of mirbane may be added to the mass. For a red soap the following mixture is used instead of chalk :—

Prepared chalk . .	℥viij.
White tripoli . . .	℥iij.
Rouge	℥iij.
Red tripoli . . .	℥ij.

Silvering-fluid

Fine silver . . .	℥j.
Diluted nitric acid (1 in 4)	q.s.

Dissolve, evaporate, crystallise, and dissolve in 3 pints of water (or use silver nitrate ℥iss.). Carefully and completely precipitate with

Potassium iodide . .	℥ij.
Water	℥x.

Wash the precipitate thoroughly and dissolve in a hot strong solution of potassium cyanide, avoiding excess. Make the solution up to 1 gal.

Directions for Use.—Heat the solution to about 185° F. in a porcelain or enamelled-iron basin, and immerse in it the articles to be silvered, which should previously have been thoroughly freed from grease. A few minutes' immersion suffices to give the articles a bright lustre, and the longer they remain in, the duller does the coating become.

Silvering-paste

Silver nitrate	gr. xxxvj.
Potassium cyanide	ʒj.
Water	ʒj.

Dissolve the nitrate in half of the water and the cyanide in the rest, mix and add to

Precipitated chalk	℈v.
Cream of tartar	gr. v.

Make a paste.

Gilding-paste

Gilding-paste may be made in the same way, using gold chloride instead of silver nitrate.

Directions.

To use either of these clean thoroughly the surface to be plated by washing with soda and water, dry, and apply the paste, allowing it to remain on overnight.

The following is another method of making the paste :—

Nitrate of silver	℥ss.
Common salt	℥ss.
Cyanide of potassium	℥j.
Chalk	a sufficiency

Dissolve the silver nitrate in a pint of water and add the salt dissolved in as much water. Mix the solutions, and collect the precipitate on a piece of cotton cloth. Transfer the moist precipitate to a mortar containing the cyanide (in powder), and dissolve by adding more water if necessary; then make the solution into a spreadable paste with prepared chalk.

To silver any tarnished article spread some of the paste upon the spot and leave for a few hours; then brush it off. Repeat if necessary. The result is not so good as by electro-deposition.

Still another method, applicable to copper surfaces, and for giving a dull silvery appearance, is to prepare precipitated silver by placing sheets of copper in a nitrate of silver bath. Dry the copper with the silver upon it, remove the silver powder, and mix with its own weight of cream of tartar and dry salt. Rub this upon the metallic surface with a damp piece of chamois leather.

Silvering-fluid

An article sold by hawkers is made by dissolving 1 oz. of mercury in 2 oz. of nitric acid, contained in an uncorked bottle, and when action ceases making up to 1 pint with water. The 'silvering' which this effects is, of course, evanescent, because mercurial. A similar article used for policemen's buttons is

Silvering-paste

Tin dust	℥j.
Mercury	℥iv.

Rub together until an amalgam is formed.

BOOT AND LEATHER DRESSINGS

The Paste and Liquid Blackings which retain their popularity in these days of patent and tan leather boots are compounds of ivory and bone black with sulphuric acid and other liquids required to give the preparations consistency. Many published formulas show evidence that their designers are unaware of the sound scientific principle which underlies the preparation of blacking, and which was exposed as long ago as 1851 by the late Mr. Day, of Day & Martin, in his report as a juror of the Great Exhibition of that year. To understand his remarks it is first necessary to note the following recipes for Liquid Blacking:—

	I	II
Ivory-black	℥xij.	℥viij.
Treacle	℥iv.	℥vj.
Sperm oil	℥j.	ʒx.
Vinegar	Oij.	℥xxiv.
Sulphuric acid	℥ij. (by weight)	℥j. (by weight)

Mr. Day stated that the proper way to proceed in compounding these is as follows :—

'The bone-black, in the state of very fine powder, and the sperm oil are first thoroughly incorporated ; the sugar or molasses, mixed with a small proportion of vinegar, is now added and well stirred with the mass ; strong sulphuric acid is then gradually poured into the vessel.' Thereupon heat is produced and effervescence ensues, the object of the addition of sulphuric acid being to decompose the tri-calcium phosphate and calcium carbonate of the bone-black, acid phosphate and sulphate of lime being formed, which, produced in this manner, give an admirable consistency to the mass, and cause thorough division of the bone-black particles, so that when the blacking is applied to leather it is capable of receiving a high polish. 'The mixture, after the action of the acid has ceased, is diluted with an equivalent quantity of vinegar, and is bottled whilst it is still warm. The vinegar should not be too weak, else the blacking will not keep.'

Anyone who understands the making of emulsions, or of mixtures in which powders are suspended, will appreciate the consummate art of these directions. The treacle is the emulsifying or suspending agent, and as it is part of the mixture when the ivory-black undergoes decomposition, the new calcium salts are at once suspended in intimate relation with the carbon particles, with which the sperm oil is also associated, and the result is a preparation which takes an ideal polish. Genuine vinegar, preferably malt vinegar, and not dilute acetic acid, should be used.

Paste Blacking is prepared in a similar manner, but it is noticeable that by using ivory-black alone the characteristics of the best paste blacking are not obtainable; for it is lamp-black which gives the peculiar odour. For the reasons already stated it is obvious, however, that ivory-black is an essential constituent of paste blacking.

I

Ivory-black . . .	℥xvj.
Lamp-black . . .	℥xvj.
Treacle	℥xvj.
Sperm oil . . .	℥iv.
Vinegar	℥v.

Mix and add gradually

Sulphuric acid . .	℥iv.

When action ceases add

Sulphate of iron . .	℥ss.
Gum arabic . . .	ʒvj.
Hot water . . .	℥v.

Work well in a mortar or mill until the paste is brought to a proper consistency.

II

Ivory-black . . .	℥x.
Treacle	℥x.
Sulphuric acid . .	℥iv.
Old cod-liver oil . .	℥ij.

Mix the first two intimately, add the acid and, when effervescence ceases, the oil.

We have come across at least a dozen formulas for paste blacking, and the merits of all are fairly represented in the first formula. The addition of sulphate of iron is a good feature, because it helps to restore the black surface of leather by forming iron tannate when the brown surface becomes exposed. The second recipe is not a good one, as it lacks the essential feature already explained, and is much too acid. We give it as an example of recipes to be avoided.

For dressing kid, glacé kid, and patent leather, special preparations are required. There are also blackings which, strictly speaking, are varnishes, and of which Nubian

Blacking is the pioneer. The latter was originally known as Acme Blacking, and was the subject of a patent now expired. The special claim of the patent was for the colouring matter, which is made as follows:—

Mother-liquid Dye.

Rectified spirit	1 gal.
Blue-blue aniline	31 dr.
Yellow aniline or naphthalene yellow	45 dr.
Red aniline or fuchsine	8 dr.

The proportions of the dyes may be varied slightly without affecting the result, and it may be necessary, owing to the variation of the dyes, to vary the proportions. If the colour is perfect, it will, after dilution with four times its volume of S.V.R., appear of a greenish-black hue when viewed through a flint-glass bottle. The specification gives the following as a more permanent colour:—

Rectified spirit	1 gal.
Blue-blue aniline	20·8 dr.
Bismarck-brown aniline	31·2 dr.

Agitate occasionally in the course of twelve hours, and filter if there is any deposit.

The Blacking.

Rectified spirit	1 gal.
Mother-liquid dye	¼ gal.

Mix and add the following:—

Camphor	11 oz.
Venice turpentine	16 oz.
Shellac	36 oz.

When dissolved add the following solution:—

Benzine	¼ gal.
Castor oil	3⅕ oz.
Boiled linseed oil	1⅗ oz

Shake well in order to obtain a perfect mixture.

Such is the gist of the specification. It seems to us that the product must be somewhat thicker than the Nubian blacking of commerce; indeed, it is not an uncommon thing for patentees to change their methods slightly as experience shows them how improvement can be made; and if in this case the product is too thick, spirit is all that is necessary to bring it to proper fluidity. Rectified spirit is indicated in the specification.

The following more simple formulas we have tried, and find that they go well :—

Liquid Shoe-polish

I

Sandarac . . .	ʒij.
Gum thus . . .	℥ss.
Shellac	℥iss.
Spirit of turpentine . .	℥ss.
Lamp-black . . .	ʒj.
Spirit	℥vj.

Dissolve the resins in the spirit and add the turpentine and lamp-black. Nigrosin ʒj. may be used instead of lamp-black.

II

White wax, cut in small pieces	ʒiij.
Ether	℥iij.
Logwood extract . .	ʒiv.
Gallic acid . . .	ʒij.
Tincture of perchloride of iron	℥j.
Spirit to	℥xvj.

Dissolve the wax in the ether. Allow the extract of logwood and gallic acid to macerate in the spirit with occasional agitation during twenty-four hours; then strain through cloth and add the tincture of iron. Now add the mixture thus prepared to the solution of wax, and again strain through cloth.

Brilliant Boot-polish

Shellac	℥iiss.
Spirit	℥xiiss.

Dissolve and add to a solution of

Curd soap . . .	ʒiiss.
Hot spirit (25 per cent.) .	℥iv. ʒvj.
Glycerine . . .	℥ss.

Then add

Best aniline black . .	ʒss.
Proof spirit . . .	ʒxiiss.

Keep for two weeks in a warm place before bottling.

Black Lustre Varnish

Indiarubber . . .	ʒij.
Mineral naphtha . .	℥iij.

Dissolve and add to the following :—

Asphalte . . .	℥ss.
Drop-black . . .	ʒij.
Spirit of turpentine. .	℥j.

Mix.

The point to note in regard to the 'Brilliant' polish is that aniline black is exceedingly variable in quality, and should anyone be so unfortunate as to get a dye which gives a brownish colour, 5 gr. of blue-blue aniline should be added. Aniline black is all the better for the addition of a trace of acetic acid; but in this case that is inadmissible, as the soap neutralises it.

French Shoe-dressing

(For Kid and Glacé Kid)

Vinegar	℥xxxij.
Logwood . . .	℥viij.
Bichromate of potash .	ʒss.

Boil and strain while hot into the following mixture, previously prepared :—

Gelatine	ʒiv.
Tragacanth . . .	ʒiv.
Glycerine . . .	ʒiv.
Water	℥xvj.

The latter should be soaked overnight, heated in the morning to dissolve, and strained with pressure. After the logwood and glue mixtures are combined, put indigo ʒij. in a large mortar, triturate, and slowly incorporate the mixture with it. Put up the dressing in W. M. bottles, with a stubby brush or sponge in the cork.

Leather Waterproofing

Oleic acid . . .	℥iij.
Ammonia soap . .	℥ij. ʒij.
Hot water . . .	℥iij.
Stearin	ʒvj.
Tannin	ʒij.

Heat the stearin and oleic acid, add half the water to the ammonia soap, and while the oleic mixture is hot add the ammonia solution and the tannin, dissolved in the rest of the water, and mix well.

If a black solution is required add liq. ferri perchlor. ℥j. to the solution of tannin.

Dress-boot Blacking

Gum arabic . . .	℥viij.
Treacle	℥ij.
Ink	℥xij.
Vinegar	℥ij.
Spirit	℥ij.

Add the ink and vinegar to the gum, dissolve in a water-bath, then add the treacle and, on cooling, the spirit. Put up in the same way as the French dressing.

NOTE.—This makes a good paste polish for kid and glacé kid boots by the addition of powdered tragacanth ʒj.

Kid-reviver

Logwood chips . .	℥iv.
Sulphate of iron . .	℥ss.
Water	Oij.

Boil half an hour. Strain into a mixture of

Powdered tragacanth .	ʒss.
Soft soap . . .	ʒj.
Glycerine . . .	℥iij.

To this add a solution of

Salicylic acid . . .	ʒss.
Oil of wintergreen . .	♏iv.
Spirit	℥j.

And add

Water to make . .	Oij.

Mix well.

Ammonia Soap, mentioned above, is made by adding strong solution of ammonia to oleic acid, until after mixing thoroughly there is a decided excess of ammonia. The above preparation is elegant, and may on that account be made a speciality; but there is nothing better than the old-fashioned protectives, such as :—

Leather-grease

Linseed oil . . .	℥xvj.
Beeswax . . .	℥ij.
Yellow resin . . .	℥ij.
Burgundy pitch . .	℥j.

Melt together.

Directions.—During the winter or in rainy weather this grease is excellent for keeping the feet dry. After cleaning the shoes, and without blacking them, warm them at the fire and apply the grease all over, using it liberally at the seams especially.

Dubbin

Whale oil	℥xxx.
Tallow	℥xv.
Beeswax	℥vj.
Burgundy pitch	℥iv.
Castor oil	℥xvj.
Oil of mirbane	ʒss.

Melt the solids together and add the oils, continuing the heat if necessary. Strain, and when nearly cold add the oil of mirbane.

This gives boots a faint polish by simply applying a little of it with a soft rag.

The formula for dubbin gives a preparation of the old-fashioned sort. Of recent years petroleum products have come largely into vogue, and several which we have had the opportunity of examining have simply been brown petroleum residue. As it is not easy to get this in the market, something like it may be made by mixing together 1 lb. each of common tar and fish oil (such as old cod-liver oil), and adding the mixture to gum thus 1 lb. and crude petroleum jelly 8 lbs., previously liquefied by heat. Strain, add oil of mirbane ʒss. and oil of citronella ʒij., and stir until creamy.

For convenience we include here recipes for Harness-paste:—

I

Mutton suet	℥ij.
Yellow wax	℥vj.

Melt and add while warm

Spirit of turpentine	℥viij.

Add the mixture to the following, previously reduced to powder and mixed:—

Sugar candy	℥vj.
Lamp-black	℥iiss.
Prussian blue	℥ss.
Soft soap	℥ij.

Mix well.

II

Spirit of turpentine	℥x.
Beeswax	℥ij.
Prussian blue	℥ss.
Lamp-black	ʒij.

Melt the wax on a water-bath and add 9 oz. of the turpentine to it slowly and stirring carefully. Then add the powders, previously rubbed up with 1 oz. of turpentine.

Cod-liver oil, 2 oz., may be used in this in place of as much turpentine.

No. 1. is a common formula, but with spirit of turpentine ℥v., which does not make the paste soft enough for boxing. Mutton suet is preferable to lard, because the latter makes a rather smeary preparation,

Brown Harness-composition

Yellow wax	℥v.
Yellow resin	℥j.
Lard	℥iv.
Spirit of turpentine	℥v.

Melt the first three together, remove from the fire, strain, and add the turpentine, stirring constantly, then occasionally until the mixture is creamy, when add a mixture of

Spirit varnish	℥ss.
Spirit colouring	ʒij.

Mix well.

A brown composition is also made from petroleum oil (5), turpentine (1), and hard paraffin ($1\frac{1}{2}$), coloured with Nankin or Bismarck brown.

Liquid Harness-blacking

Yellow wax	℥iv.
Linseed oil	℥ij.
Yellow resin	℥j.
Ivory-black	℥iv.
Prussian blue, finely powdered	℥j.
Copal varnish	℥j.
Spirit of turpentine	℥xx.

Melt the wax, resin, and linseed oil by heat; to this add the turpentine and varnish, previously mixed. Mix the black and blue in a large warm mortar, and to them add the oily mixture gradually, and stir to form a homogeneous product.

To be applied with a brush and rubbed up with a soft cloth.

Brown Boot and Leather Dressings.—The fashionable craze for tan-leather boots and shoes has created a demand for polish adapted for them. We may state generally that most of the preparations in the market are simply furniture-polish of one kind or other, coloured bright yellow with phosphine, or darker with Nankin or Bismarck brown. Mixtures of these afford the intermediate shades. The colouring is not really essential; but cheap tan boots can only get the rich surface by daily use of the darker-coloured polishes. In our experience the best polish is a paste one, consisting of beeswax, turpentine, and a little cod-liver oil. The creams are apt to harden the leather, because, being watery and slightly alkaline, they dry in the substance, and the boots need a little exercising before they become comfortable to the feet. This may in a measure be prevented by adding cod-liver oil to the cream. Wax and turpentine alone in an aqueous cream are not sufficiently penetrative.

Tan Shoe-paste

Yellow wax (dark)	℥j.
Palm oil	℥j.
Oil of turpentine	℥iij.

Melt together on a water-bath and colour if desired with Nankin brown gr. v. dissolved in a little spirit.

This to be put up in tin boxes to retail at 1*d.* upwards.

Brown Leather-dressing

Yellow wax	℥iv.
Potassium carbonate	℥ss.
Yellow soap	ʒij.
Water	℥xij.

Boil together and add

Spirit of turpentine	℥v.
Phosphine	gr. iv.
Water	℥ss.

The phosphine to be dissolved in the water. Mix the whole thoroughly.

The dressing is interesting as being the formula which *The Chemist and Druggist* originally published, and upon it a large proportion of the trade tan polishes are based. The dressing is apt to become clotty, and that is its chief objection. The following are better :—

Brown Boot-creams

I

Yellow wax	℥vj.
Linseed oil	℥x.
Spirit of turpentine	℥xxx.

Dissolve by means of a water-bath in a closed vessel and add

Primrose soap	℥iv.

Previously dissolved in

Water	Oij.

Stir continually till cold. Then colour with

Nankin brown	ʒiij.
Spirit	℥iss.

Previously rubbed together until uniform.

II

Finest roll annatto	℥ss.
Household soap	℥iss.
Yellow wax	℥vj.
Old cod-liver oil	℥iv.
Oil of turpentine	℥x.
Distilled water	℥xxiv.

Cut the annatto into small pieces, put it into a mortar, and make it into a cream with 3 oz. of boiling water. Dissolve the soap in the rest of the water by heating, and have ready in a Winchester, mixed with the annatto. Melt the wax and cod-liver oil together, and add the turpentine gradually without increasing the heat. Add the mixture 4 oz. at a time to the soap solution, shaking vigorously until all is combined.

Some prefer curd soap to primrose soap, because it gives a creamier compound. Cod-liver oil is much better than linseed oil, because it softens the leather. Catechu, rhubarb, and many other yellowish-brown colours are recommended for colouring these creams, and they are good enough for the purpose ; in fact, it is well to remember that the furniture-polish is the main thing, and there is no great secret in the colour. Ordinary butter-colouring made from annatto is as good as anything for the purpose. For green dressing use solution of chlorophyll to colour.

White Boot-top Cleaner

Cream of tartar	℥ij.
Oxalic acid	℥j.
Alum	℥j.

Mix.

Direct the powder to be mixed with 3 pints of sour milk and to be used to rub the tops.

Brown Boot-top Liquid

Saffron	gr. xv.
Boiling water	℥ij.

Infuse and strain, then add

Tincture of rhubarb	℥iss.
Infusion of rhubarb to	℥vj.

Mix.

Leather (Maroon), to Restore

Sponge with turpentine and when dry apply the following with a cloth :—

Yellow wax	℥ij.
Gum thus	℥j.
Turpentine	℥viij.

Dissolve by gently heating.

Sometimes it may be necessary to apply a little maroon dye before the polish.

NOTE.—White of egg is used for polishing the backs of books.

PEST EXTERMINATORS

For want of a better title, we group under this one formulas for such preparations as fly-papers, bug and insect destroyers generally, moth-killers, and mouse and rat poisons. There is a large variety of such articles in trade, and it is difficult to give a proper selection without omitting some minor kinds which have their strong adherents, or unnecessarily extending the pages of the volume. We take, therefore, the medium course of giving here and there a running commentary upon sections to which that method is applicable.

Fly-papers.—The varieties of these are well known. The old arsenic paper has gone out of favour, and the fact that such papers can only be sold by registered chemists and druggists, and under the regulations of the Arsenic and Pharmacy Acts, will further restrict their sale. The papers are made from coarse unsized paper, of a claret-brown colour, by dipping in the following solution and drying :—

Arsenious acid	℥iv.
Solution of potash	℥xvj.
Sugar	℔. ij.
Water	Cong. j.

Boil together until the arsenic is dissolved.

Non-poisonous fly-papers of the Papier Moure class are dipped in an infusion of quassia. It has, indeed, been publicly stated that quassia is the only drug in papier Moure. The following decoction gives more attractive papers :—

Quassia	℥xvj.
Colocynth	℥ij.
Long pepper	℥iv.
Water	Cong. j.

Boil until the decoction is reduced to 4 pints ; strain, and dissolve in the clear liquid 4 oz. of sugar.

The colocynth is sometimes omitted.

Cobalt Fly-papers are made by adding chloride of cobalt ℥iss. and tartar emetic ʒj. to the quassia decoction as above. This paper is as good as the arsenical, and has not, of course, the same toxic properties.

Sticky Fly-papers have been one of the most astonishing evolutions connected with pharmacy, for, although our grandmothers knew the 'catch 'em alive' man (whose cry was familiar in London in the early decades of the nineteenth century), the sticky fly-paper is a *fin-de-siècle* product, as elegant as it is sticky. Resin, oil, and golden syrup were the ingredients with which the early makers conjured, and this fact stuck closely to the trade when pharmacists took it up. A rather superior person suggested that elegant papers could be made by dissolving resin (4 oz.) and castor oil (2 oz.) in a pint of methylated spirit, and flavouring with oil of lemon (ʒj.) ; this solution to be painted over the paper. But there was no thought of the permeation of the paper with this varnish. The method is thoroughly impracticable. So are most of the methods in which resin is used. For example, (I.) resin 4 and castor oil 2, and (II.) resin 10, gum thus 5, linseed oil 7, with or without the addition of golden syrup or honey. In time it came to be understood that birdlime was the proper thing to use, and one of the most successful makers was proud of the fact that he used a carbon bisulphide solution of birdlime. The next step was the discovery that Birdlime is nothing more or less than boiled linseed oil, and the recipe for it in *The Chemists' and Druggists' Diary* for 1894 is (we have been told by an authority) a correct description of the method. It is brief enough at all events, viz. :—'An artificial birdlime is made by boiling linseed oil until it becomes stringy.' The 'birdlime' requires the addition of a non-drying oil, and for this purpose there is nothing better than castor oil. But sticky fly-paper makers have their own secrets in regard to that—*e.g.*, one uses neatsfoot oil. We have come, however, to the zenith of the evolution era, and boiled linseed oil stands out as the basis of the popular fly-paper. If any retailer is rash enough to wish to manufacture these papers instead of buying them, here is the formula to start from :—

Boiled linseed oil	℥vj.
Gum thus	℥j.
Castor oil	℥ij.

The quantities of the ingredients must vary according to the condition of the linseed oil. It is necessary to have a non-drying oil, such as castor oil, in the composition. Vaseline oil is also good, and a trace of beef-suet is not an objection, because animal matter of any kind helps to draw the flies, especially if it be putrid. A good quality of parchment-paper must be used, and the composition spread upon it while hot with a stiff brush ; the paper then folded and the edges turned over, or the composition prevented from exuding by some other means. Several methods for doing this are protected by patent. Japanese birdlime is best for coating Fly-strings.

Bug-poisons do not yet rank as a leading 'profitable extra,' because few if any chemists have had the courage to make them a counter-speciality. The active ingredient in most of the poisons is mercury in some form. For example, 3 oz. of blue ointment dissolved in as much oil of turpentine as will make up a winebottle is a good thing and a popular household remedy. It is put into all wood chinks with a feather. Corrosive sublimate is also a favourite destroyer, and the chief ingredient in many preparations—flavoured with such things as tincture of insect-powder, camphor, tobacco, and spirit, apparently on the principle of making it pleasant for the bugs. We quote two of these.

I

Corrosive sublimate	℥iv.
Sal ammoniac	℥iv.
Water	Cong. ss.

Dissolve and add

Glycerine	℥iv.
Wood naphtha	Cong. ss.

Mix.

II

Corrosive sublimate	℥j.
Water	Ovj.

Dissolve and add

Tincture of insect powder (1 in 4)	℥xvj.

Mix.

These preparations are to be brushed over the parts where the pests are, and it is a good plan to add about half a pint of either solution to each bucketful of whitewash used for cleaning the walls and ceilings of the rooms. Another Good Bug-lotion, in which there is no corrosive sublimate, is made by dissolving in a gallon of tobacco tincture (1 lb. of tobacco to a gallon of proof spirit) 4 oz. each of boric and carbolic acids and 8 oz. of salicylic acid, with a few drachms of oil of melissa or eucalyptus to partially cover the tobacco smell, which, however, is really fatal to the use of this remedy in many cases, as it takes a long time to get the smell out of a house. Sulphurous acid is a good remedy, simply put into the wood chinks; but, beyond all, conscientious use of soap and water—or, in brief, cleanliness—is the bug's dread. We may explain here that the American use of the word 'bug' is not, as with Britishers, restricted to the house-bug, but is applied generally to many insect pests—such as the water-bug, June bug, potato-bug, &c. So that 'bug' means 'fly' with them. Insecticides for plants are dealt with on pages 336, 427, and 436.

Moth Cake or Brick

I

Cedar-dust	℥j.
Camphor	℥j.
Cassia powder	℥j.
Orris powder	℥j.
Oil of lemon	♏x.
Powdered myrrh	ʒij.
Powdered curd soap	ʒij.

Mix, adding sufficient S.V.R. to mass, and press into cakes.

II

Orris in coarse powder	℥j.
Chalk	℥iss.
Plaster of Paris	℥ss.
Lavender-water	ʒij.
Rose-water, enough to make a paste.	

Mould the paste into suitable cakes, dry, and wrap in tinfoil.

Moth-powder

I

Camphor	℥iv.
Benzoin	℥j.
Black pepper	℥ij.
Cedar sawdust	℥v.

Mix after reducing the solids to a coarse powder.

II

Patchouli-leaves	℥x.
Valerian-root	℥v.
Camphor	℥iv.
Orris-root	℥v.
Sumbul-root	℥v.
Oil of patchouli	ʒss.
Otto of rose	ʒss.

Coarsely powder the solids, mix, and add the oils.

These preparations are for keeping in small quantities in wardrobes, drawers, &c., wherever moths may congregate. Naphthalin in one form or another is now a favourite preventive, as, for example, in the following form :—

Naphthalin	℥ix.
Camphor	℥iij.

Melt by a gentle heat and add

Coumarin	gr. iij.
Nerolin	gr. ij.
Oil of mirbane	♏x.

Mix and while liquid pour into moulds.

It is as well that it should be understood that none of these things kill moths. Hundreds of tons of camphor have been used with that object, but no one has yet produced a moth slain by it. All that camphor and other things like it do is to prevent the moths going where they are. They do not like the smell, but if forced to it by hunger, or rather by the desire to deposit their eggs in a nice warm place, then they will put up with the camphor, &c. The chief facts in mothology are : Moths seldom appear before April, and are with us until August or September. They come from last season's eggs, which have been deposited in any hairy or woollen article which the mother had found convenient. Each lay numbers 18 to 140 eggs, and most of these in from three to eleven days are hatched into white soft larvæ or worms, which make for themselves a comfortable case from the cloth in which they are deposited. They begin to grow and use more of the cloth in the process, this continuing for a month, when the worm is at its biggest ; then it begins to wander and make those tracks over clothing which are so heartbreaking ; but by-and-by it seeks a cosy spot, and there, fastening up the ends of its case, becomes the full-sized cocoon, sleeps all winter, and in the spring is ready to take wings, find a mate, and, if it be of the female persuasion, it may return to the home of its birth to do 'the like' in a succeeding generation.

It is apparent from this description that the moth itself is a harmless insect, and that the real enemy to attack is the eggs or the larvæ. The best thing for killing them is benzine or any other liquid which will dissolve the waxy coating of the eggs. It is best applied as a spray to all joints of wardrobes and drawers, and to clothing which is suspected of being attacked. For retail purposes the benzine may be perfumed or otherwise medicated, but the benzine is the thing that does the work. It is obvious from what has been said that the usual time for attacking moths—namely, at the end of the winter—is the wrong time, and those who wish to put down the pest should be assiduous from July to September in brushing and applying the benzine spray. When springtime comes the preventives of the camphor type may be used as abundantly as the purse permits.

Moth-solution

Carbolic acid	℥j.
Camphor	℥j.
Benzine to	℥xvj.

Dissolve.

To be used as a spray, or upon blotting-paper placed in wardrobes, &c.

Mosquito-preventives.—One of the peculiarities of men is that they think can put down mosquitoes, and they demand certain fumigators and lotions to assist them in the process. There is no harm in supplying them.

Mosquito-pastilles

I

Powdered charcoal .	℥xvj.
Nitrate of potash .	℥ij.
Carbolic acid . .	℥iss.
Insect-powder . .	℥viij.
Tragacanth mucilage	a sufficiency

Make into a stiff paste with the mucilage, and form into cones weighing about ʒj. each.

II

Powdered charcoal . .	℥xvj.
Nitrate of potash . .	℥ij.
Benzoin . . .	℥iv.
Hard tolu balsam . .	℥ij.
Insect-powder . .	℥iv.
Tragacanth mucilage .	q.s.

Powder the solids and make into cones in the same manner as No. I.

For the Extermination of Ants numerous methods have been suggested, and as there are black, white, and red ants it is not to be expected that there is a universal remedy. Turpentine, paraffin, and all other strong-smelling substances they hate, and to prevent them coming into houses either paraffin or turpentine should be freely sprinkled outside and inside the door. Solution of sulphurated potash is also good, but this keeps away larger visitors. Borax mixed with camphor (℥j. to 1 lb.) or powdered cloves (same proportion), sprinkled where they most do congregate, often makes them migrate. So also do such mixtures as quicklime 1 lb. and camphor ℥j. One of the cheapest and best things to drive away ants is a solution of crude carbolic acid (3 oz. in a gallon of water): the insects positively hate this.

Blackbeetles and Cockroaches are not killed by insect-powder, but if it is sprinkled near their holes and over the floors the last thing at night, it intoxicates them, and they can be swept up in the morning. The best of the poisons for these pests contain red-lead, such as:—(1) Red-lead ℥j., oatmeal ℥iv.; (2) borax ℥vj., red-lead ℥ij., sugar ℥iij., cocoa-powder ℥j. The following is also good:—(3) Precipitated carbonate of barium ℥j., borax ℥ij., oatmeal ℥iij. It must be confessed that the insects frequently thrive on these powders.

Greenhouse Insecticides.—Paraffin oil is one of the best general insecticides for fruit-trees and greenhouse plants. Tobacco, especially in the form of a solution of crude nicotine, is fatal to green fly. Both of these also kill caterpillars, but the popular remedies for these are white hellebore and quassia. Paris green and London purple (both arsenical compounds) are now becoming known in this country. They have long been used in North America, and possess no advantage over white arsenic, which is equally poisonous and cheaper.

Nicotine Fluid

Tobacco-juice . . .	Oij.
Solution of subacetate of lead	ʒj.

Mix, shake, and set aside overnight to deposit. Decant the clear solution, filter the sediment, and add solution of phosphate of soda to precipitate any excess of lead.

Filter and mix with the following solution:—

Soft soap	℥vj.
Camphor	℥iij.
Oil of rosemary	ʒij.
Spirit to	Oij.

Mix, and after a day filter.

A teacupful of the fluid to a pailful of water for syringing the plants. The fluid may also be used by vaporising in the greenhouse.

Whitehead's Remedy

Soft soap	lb. vij.
Quassia	lb. vj.
Water	Cong. 100

Macerate overnight.

For Green Fly

Bond's terebene	℥ij.
Soft soap	℥iv.
Spirit	℥vj.

Dissolve.

Mix 1 to 4 oz. of this solution with a gallon of water, and use as a wash or spray.

Quassia Compound

Extract of quassia	lb. j.
Soft soap	lb. vij.

Mix thoroughly.

One pound to be dissolved in 30 gals. of water and used as a wash.

As it is not possible to enter fully into consideration of insect pests in this book, we commend to those who wish to specialise in the matter the Government handbook, written by Mr. Charles Whitehead, F.L.S., and obtainable from Messrs. Eyre & Spottiswoode, East Harding Street, E.C., for nine penny stamps. This booklet contains descriptions of the insects which commonly infest field plants, and gives remedies.

Mouse and Rat Poisons.—All preparations containing arsenic must, according to law, be coloured. Prussian blue is commonly used. Strychnine vermin-killers should, by preference, be made with sulphate of the alkaloid, and not the pure alkaloid, because the former, being more soluble, acts quicker. The addition of certain essential oils to phosphorus paste, in order to cover the odour of the poison and attract the vermin, is advisable, but sooner or later the animals who escape know the odour and shun the poison. The lure should be changed occasionally. The best diluents for arsenic and strychnine are fine oatmeal and wheatmeal, and in making pastes beef dripping is preferable to other fats. The vermin-killers which cause rats to die in their holes, and yet do not create a bad odour from the decomposition of the bodies, are composed of tartar emetic or barium carbonate. The latter is understood to cause intense thirst in the animals, and this fact has suggested the addition of calcium sulphate to such compounds, the result being that when the animals drink the calcium sulphate becomes hydrated, and consequently the animals are literally petrified. We ought to say that these special claims for vermin-killers are largely imaginary. Arsenic is one of the best antiseptics known, yet the bodies of rats and mice killed by it decompose as quickly as if the animals were killed by a dog and the bodies allowed to decompose spontaneously.

Powder Vermin-killers.—At the meeting of the British Pharmaceutical Conference in 1889, Mr. A. H. Allen reported upon about two dozen vermin-killers (*C. & D.*, xxxv. p. 371), and the results obtained showed some curious points. First, the poison in most of them is strychnine; second, rice-flour and wheat-flour are used as the diluents; third, carmine, Prussian blue, ultramarine, and soot are the colours commonly used; and, fourth, the proportion of strychnine varies from 4·3 to 41·8 per cent., but 12 per cent. is an average strength, or 2 gr. of the alkaloid in a 3*d.* packet weighing 18 to 20 gr. Mr. Allen strongly recommended chrome-green as a colouring agent, especially because it is easily detected should the powder be used for criminal purposes. At the same time he gave an analysis of Battle's Vermin-killer, showing it to be composed of strychnine 5·8 per cent., barium carbonate 45 per cent., soot and flour 49·2 per cent. Rough on Rats has frequently been analysed, and arsenic found to be the chief constituent. Similar preparations to it are made with tartar emetic—*e.g.*, arsenic 6 parts, tartar emetic 4 parts, with sufficient colouring. Tartar emetic is supposed to induce vomiting in larger animals than rats, hence such mixtures are claimed to be harmless to dogs and cats. The following are a few formulas which have been published in *The Chemist and Druggist*, and which we know to be good :—

I

Strychnine sulphate .	ʒj.
Sugar of milk . .	ʒiij.
Prussian blue . . .	gr. v.
Sugar	℥ss.
Oat-flour . . .	℥ss.

Triturate the first three ingredients in a mortar for five minutes, then add the sugar and flour. Mix well.

II

White arsenic . . .	ʒj.
Ultramarine . . .	gr. x.
Cornflour . . .	℥ss.
Sugar	ʒij.

Mix in the same manner as No. 1. From 10 to 20 drops of tincture of asafœtida may be added.

Used by Ratcatchers

Powdered squill . .	℥j.
Barium carbonate . .	℥iv.
Oil of anise . . .	gtt. v.

Mix.

Spanish Rat-poison

Pulv. cantharidis . .	℥j.
Pulv. sacch. impur. . .	℥j.
Pulv. moschi . . .	gr. j.
Ol. rhodii . . .	gtt. x.
Ol. carui . . .	gtt. x.
Pulv. byni . . .	℥x.

Rub the musk and oils with the brown sugar and cantharides, then add to the malt-flour, and mix well; finally sift.

Rats are so artful that it is often exceedingly difficult to catch them or get them to eat poison. It is a good plan, therefore, to feed them for a night or two with equal parts of sugar and oatmeal flavoured with aniseed or other spice, then mix the same food with its own weight of plaster of Paris, or dose it with another poison. Ground biscuit is another good thing to feed the vermin with and to use as a diluent for the poison instead of wheat and rice flour, which are not nearly so attractive as a tasty biscuit. Rat-cake is a coarse biscuit containing 20 per cent. of arsenic.

Phosphorus Paste has the distinction above most vermin-killers of not being, in Great Britain, a "poison." There are many stupid formulas for it, yet there is, perhaps, nothing so easy to make as an active and fatal phosphorus paste with the phosphorus in a practically unoxidised state. The points to note are that phosphorus may be readily dissolved in carbon bisulphide (1–2), chloroform (1–25), and hot fats (1–20 or more), and that if we make a supersaturated solution (as when the solvent is hot) the phosphorus after separating will not oxidise if kept submerged in the solvent.

I

Phosphorus . . .	ʒj.
Beef-dripping . . .	℥ij.
Wheat-flour . . .	℥ij.
Sugar	℥j.
Powdered biscuit . .	℥j.
Water . . .	a sufficiency

Warm a large porcelain mortar and pour 6 oz. of boiling water into it; add the phosphorus. When melted add the dripping (previously liquefied in a water-bath), and stir assiduously, adding a little biscuit; then add the powders and water to a suitable consistency. Colour with a little methyl blue dissolved in spirit.

II

Phosphorus	ʒj.
Carbon bisulphide	℥ss.
Beef-dripping	℥iij.
Biscuit powder	℥iij.
Comp. tragacanth powder	℥ss.
Oil of anise	gtt. x.
Oil of peppermint	gtt. v.
Boiling water	℥iij.

Heat the dripping until it is quite clear, and transfer to a hot mortar; pour into this the carbon bisulphide in which the phosphorus has been dissolved; stir, then add the two powders and the oils, and finally the boiling water all at once, kneading the mass thoroughly until a perfect mixture is obtained.

These are practically alike, but by dissolving the phosphorus in the carbon bisulphide the paste is made much more quickly, and it is one which the vermin eat more readily. The carbon bisulphide should be purified by keeping it in contact with a little mercury or copper, which combine with the free sulphur that gives the bisulphide its repugnant odour. Most of the bisulphide is dissipated by the hot water, and, as the solvent evaporates, access of air, therefore oxidation of phosphorus, is prevented. Another good way to make the paste is to melt lard in a wide-mouth bottle in a water-bath; introduce into it ½ oz. of phosphorus for every pound of lard; then add a pint of proof spirit; cork the bottle firmly, keeping the contents heated to 150° F., and agitate smartly until the phosphorus becomes uniformly diffused, forming a milky-looking liquid. This liquid on cooling affords a white compound of phosphorus and lard, from which the spirit spontaneously separates, and may be poured off to be used again, as it only serves to diffuse the phosphorus in very fine particles through the lard. This phosphorised lard, on being warmed very gently, may be poured into a mixture of its own weight of barley or wheaten meal and sugar, incorporated therewith, and after flavouring with oil of rhodium, &c., the dough made into pellets for distribution to the mice. As a flavouring, the following may be used:—

Rat-bait

Oil of rhodium	♏xx.
Oil of caraway	ʒj.
Oil of lavender	♏v.
Oil of aniseed	♏x.
Tincture of musk	♏v.

Use 10 drops to the ounce of fat.

Rat-paste without Phosphorus

Tartar emetic	ʒj.
Powdered squill	ʒj.
Carbonate of barium	ʒij.
Beef dripping	℥iss.

Mix well.

Arsenical Paste

Arsenic	℥j.
Oat-flour	℥viij.
Indigo	ʒj.

Mix well by trituration and add

Oil of anise	♏x.
Melted dripping	℥xij.

Beat into a paste.

Non-scheduled Rat-poison

Biscuit-flour	℥iv.
Barium carbonate	℥iv.
Caster-sugar	℥ij.
Oil of anise	♏v.
Oil of cummin	♏v.
Essence of musk	♏x.

Mix well.

These poisons are sometimes required in pill form, for which purpose all that is necessary is to sufficiently dilute any of the powder poisons with three times their weight of malt flour and make into soft pills with equal parts of glycerine and syrup.

DISINFECTANTS

The subject of disinfectants is too vast to treat with anything like thoroughness in a book of formulas—indeed, this is not necessary except for those who wish to undertake the manufacture of disinfectants on a large scale, and to such we commend the book on 'Disinfection and Disinfectants,' by Dr. Samuel Rideal, published by Charles Griffin & Co. at 7*s.* 6*d.* This work contains an intelligent description of all the substances used in the manufacture of disinfectants, and notes on practically the whole of the popular disinfectants, especially those which are the subject of letters patent. For the instruction of the public the National Health Society, 53 Berners Street, London, W., publish a penny pamphlet on 'Disinfection and Disinfectants,' the information in which is sufficiently precise to serve for guidance in cases of infectious sickness.

By far the larger proportion of disinfectants are used merely for counteracting bad smells, although their primary object is to kill pathogenic micro-organisms (disease microbes) and thus prevent the spread of infectious diseases. Bacteriologists reckon the value of disinfectants by their antiseptic power—that is, the quantity of the substance in a known volume of putrifiable or fermentable material required to prevent the growth of specific micro-organisms. It rarely happens that disinfectants are actually used on the principle upon which their scientific value has been determined, but in the case of the sputa of consumptive patients and the excreta of those suffering from infectious diseases they are. As a matter of fact, however, disinfectants are not generally used with any idea of their microbic power. The following table showing the parts of substances per thousand required to prevent the growth of the common micro-organisms in culture media at the normal temperature, two days' contact being allowed, is a fair proof of this assertion. The experiments were made by Miquel, and similar results have been obtained by other bacteriologists :—

Mercuric iodide	0·025
Silver iodide	0·03
Hydrogen peroxide	0·05
Mercuric chloride	0·07
Silver nitrate	0·08
Osmic acid	0·15
Chromic acid	0·20
Iodine	0·25
Chlorine	0·25
Hydrocyanic acid	0·40
Bromine	0·60
Chloroform	0·80
Copper sulphate	0·90
Salicylic acid	1·00
Benzoic acid	1·10
Potassium bichromate	1·20
Potassium cyanide	1·20
Picric acid	1·30
Ammonia gas	1·40
Aluminium chloride	1·40
Zinc chloride	1·90
Lead chloride	2·00
Mineral acids	2 to 3
Oil of bitter almonds	3·20
Oil of thyme	3·20
Carbolic acid	3·20
Oil of cumin	3·30
Oil of peppermint	3·50
Potassium permanganate	3·50
Lead nitrate	3·60
Oil of cloves	3·60
Oil of neroli	3·80
Oil of lemon	3·90
Aniline	4·00
Oil of lavender	4·20
Alum	4·50
Oil of cinnamon	4·50
Tannic acid	4·80
Eucalyptus oil	4·80
Oil of rosemary	4·80
Oil of turpentine	5·50
Camphor	5·50
Arsenious acid	6·00
Boric acid	7·50
Sodium arseniate	9·00
Chloral hydrate	9·30
Sodium salicylate	10·00
Iron sulphate	11·00
Amylic alcohol	14·00
Ether	22·00
Calcium chloride	40·00
Borax	70·00
Alcohol	95·00
Barium chloride	95·00
Potassium sulphocyanide	120·00
Potassium iodide	140·00
Potassium cyanide	150·00
Sodium chloride	165·00
Glycerine	225·00
Sodium hyposulphite	275·00

It will be seen from this that the popular disinfectants which owe their virtues to mercuric chloride, hydrogen peroxide, and carbolic acid are based upon fairly sound data, but it is in the application of the substances that we break down. For example, we pour a teaspoonful or two of permanganate solution into a closetpanful of fluid, making the dilution probably about 1 in 7,000, while we need 1 in 300 for complete bactericidal efficacy. Another circumstance which must not be overlooked is that what will kill the full-fledged bacillus may have no effect whatever upon the spores of the micro-organisms. This was admirably shown by Koch in some experiments undertaken for the German Imperial Board of Health. His object was to determine the value of reputed disinfectants, and he found that a 2-per-cent. solution of carbolic acid was almost inert. Sulphurous acid was powerless against spores; but bacilli and micrococci, when exposed to the fumes in a box, were killed within twenty minutes, but not so in a room. Chloride of zinc was just as harmless, although it is one of the oldest disinfectants in use.

Spores were killed by fresh chlorine-water, also by 2-per-cent. bromine-water, 1-per-cent. aqueous solution of corrosive sublimate, 5-per-cent. solution of permanganate of potassium, and 1-per-cent. osmic acid, within one day; 1-per-cent. formic acid in four days, oil of turpentine in five days, solution of chloride of iron in four days; 1-per-cent. arsenious acid, 1-per-cent. quinine, 2-per-cent. muriatic acid, within ten days; and ether within thirty days.

The following were found to be inert or possessed of little influence: Distilled water, alcohol, glycerine, oil, carbon bisulphide, chloroform, benzol, petroleum ether, ammonia, saturated solution of common salt, bromide and iodide of potassium, 1-per-cent. sulphuric acid, sulphate of zinc and copper, alum, 1-per-cent. permanganate of potassium, chromic acid, the chromates and bichromates, chlorate of potassium 5 per cent., boric acid 5 per cent., acetic acid 5 per cent., tannic acid 5 per cent., benzoate of sodium 5 per cent., iodine 1 per cent., thymol 5 per cent., salicylic acid 1 per cent.

As regards substances which prevent the further development of spores, the following results were obtained. The first numbers mean retarding the development, the rest totally preventing it :—

Corrosive sublimate	1 : 1,600,000	1 : 320,000
Oil of mustard	1 : 330,000	1 : 33,000

Arsenite of potassium	1 : 100,000	1 : 10,000
Thymol	1 : 80,000	—
Oil of turpentine	1 : 75,000	—
Hydrocyanic acid	1 : 40,000	1 : 8,000
Oil of peppermint	1 : 33,000	—
Chromic acid	1 : 10,000	1 : 5,000
Picric acid	1 : 10,000	1 : 5,000
Iodine	1 : 5,000	—
Salicylic acid	1 : 3,300	1 : 1,500
Permanganate of potassium	1 : 3,000	—
Hydrochloric acid	1 : 2,500	1 : 1,700
Camphor	1 : 2,500	—
Eucalyptus oil	1 : 2,500	—
Benzoic acid	1 : 2,000	—
Borax	1 : 2,000	1 : 700
Carbolic acid	1 : 1,250	1 : 300

But as, for purposes of disinfection, the micro-organism must be killed, and in the shortest possible period, and the effect of retarding the development of the spores (antiseptic) is not sufficient, only the following can, according to Koch's experiments, be said to be of value: Corrosive sublimate, chlorine, bromine, iodine.

These are scientific facts which the work of other bacteriologists has corroborated more or less fully, and if we were to consider modern disinfectants in their light only, we should have to conclude that disinfectants generally are valueless. But we do not consider that conclusion justifiable, because in natural circumstances air and light have much to do with the destruction of micro-organisms, and the initial purposes of a disinfectant are to destroy bad smells and start the microbicidal work.

The disinfectant which satisfies, beyond dispute, scientific requirements is the English Local Government Board's Solution recommended to local boards of health during the 1892 cholera scare. It is—

Corrosive sublimate	℥ss.
Hydrochloric acid	℥j.
Aniline blue	gr. v.
Water	Cong. iij.

Dissolve.

This is used as it is for immersing clothes, &c., and for adding to bedroom vessels. The ingredients for the solution (the mercuric chloride with an equal proportion of salt or sal ammoniac and the colouring) are generally made into compressed tablets, each of which makes a pint or quart of disinfectant. Messrs. Burroughs Wellcome & Co. have registered the word 'Soloid' for such tablets.

It will be observed from the first table that hydrogen peroxide holds even a higher place as a bactericide than corrosive sublimate, over which it possesses the further advantage of being destructive to the products of putrefaction; indeed, the latter characteristic is the one for which it is chiefly employed, and it is probable that essential oils act in the same manner through the production of hydrogen peroxide by the influence of air and moisture. In 1878 Mr. C. T. Kingzett, taking advantage of the last-mentioned reaction, patented a process for the production of Sanitas, which consists essentially in pumping air through turpentine and warm water, and the process has since been improved by the incorporation of camphor, thymol, eucalyptus oil, and other substances with the turpentine. Hydrogen peroxide and camphoric acid are the chief products of the prolonged action of the air and moisture upon essential oils, and these are contained in the aqueous and oleaceous forms of 'Sanitas,' together with aromatic principles which make this disinfectant one of the most pleasant in use. Kingzett's 'bactericide' is a solution of corrosive sublimate in 'Sanitas' fluid, so that it exhibits the antiseptic and disinfectant properties of two of the best substances in the first list.

Carbolic-acid Disinfectants are most commonly in use. The crude acid is obtained from tar oils, or, in the distillation of coal-tar, a special fraction containing most of the phenol is collected as 'carbolic oils' before the creosote oils are distilled, or from the crude oils, which contain, besides carbolic acid, naphthalene and other hydrocarbons as well as cresylic acid. The carbolic acid is extracted by treating with soda lye of s.g. 1·090 to 1·095, which dissolves chiefly carbolic acid and little naphthalene, &c. The solution of carbolate of soda is afterwards decomposed with a mineral acid, and the carbolic acid separated and subsequently purified. Those who wish full information on this subject should consult Lunge's 'Coal-tar and Ammonia,' published by Gurney & Jackson, an expensive but invaluable work. Upon the nature of the material employed the quality of the resulting acid depends, and as increase of strength of the soda solution has the effect of dissolving more or less of the hydrocarbons, these bodies may occur in crude carbolic acid in quite undesirable quantity. The Board of Trade stipulates that the acid supplied to merchant and other ships 'should contain not less than 80 per cent. of carbolic or cresylic acid.' We may explain here that cresylic acid is the liquid or non-crystallisable portion obtained in the crystallisation of carbolic acid, and the best crude carbolic acid in the market consists largely of this liquid. It contains the three isomeric cresols (ortho, meta, and para), but chiefly paracresol, and is more powerful as an antiseptic than phenol (the crystallisable portion of crude carbolic acid). The difference, chemically, between the two is that cresol is phenol with a hydrogen atom replaced by a methyl group :—

Phenol, $C_6H_5.OH$. Cresol, $C_6H_4.CH_3.OH$.

In combination with alkalies carbolic acid is almost valueless as an antiseptic and disinfectant, and this fact must be borne in mind in preparing Carbolic Disinfecting-powders. Lime is an unsuitable basis for these. The best substances to use are gypsum, infusorial earth, bricks, and the residue obtained from the manufacture of aluminium sulphate from shale or kaolin—in fact, any cheap non-alkaline silicious substance capable of absorbing the acid without combining with it may be used. The proportion of carbolic acid should be at least 15 per cent., but as much as 30 per cent. can be taken up by kieselguhr. Peat-earth and sawdust are also recommended as absorbents. The following recipe is representative :—

Carbolic acid	2 gals.
Kieselguhr	14 lbs.
Gypsum in lump	1 cwt.
Red ochre	½ lb.

Grind the gypsum in a roller-mill along with the ochre. Mix the kieselguhr with about twice its weight of the powder, add the acid gradually to this, stirring well, then the rest of the powder. Pass through an inclined sieve made of wire netting (½-inch mesh) several times, and finally sift through a No. 10 sieve.

The following recipes are for Perfumed Carbolic Acids, such as are used in deodorising sick-rooms :—

I

Carbolic-acid crystals .	℥ij.
Rectified spirit . .	℥ij.
Oil of bergamot . .	♏xx.
Oil of eucalyptus . .	♏xx.
Oil of citronella . .	♏vj.

Dissolve and add

Tincture of cudbear . .	♏xx.
Water to . . .	℥xx.

Set aside for a few days and filter through fullers' earth.

II

Carbolic acid . . .	℥j.
Eau de Cologne . .	℥j.
Dilute acetic acid . .	℥xviij.

Keep in a cool place several days, and filter.

[This is specially intended for disinfection by dropping on a hot plate. May be called 'Carbolised Toilet-vinegar.']

Although the antiseptic power of carbolic acid is much decreased when it is combined with alkalies, there are many 'soluble' disinfectants of this class which are popular. Phénol Sodique, a French dental antiseptic, is of this class. It is sometimes called Soda Phénique, and the official name of it is Solution de Phenate de Soude. The formula is: Crystallised carbolic acid, 7 grammes; solution of soda (s.g. 1·332), 10 grammes; water to 100 c.c. Dissolve. For a mouth-wash, 1 part of this solution is dissolved in 30 parts of water.

According to Mr. G. M. Beringer, a proprietary phénol sodique popular in the United States differs from the foregoing in containing but a small proportion of phenol and much tarry matter. It is a thin, dark-coloured, almost black liquid, and may be made as follows :—

Coal-tar	℥ij. (troy).
Caustic soda	ʒij.
Water to	℥xvj.

Dissolve the soda in 4 oz of water; warm, add the coal-tar, and agitate thoroughly for a few minutes. Add the rest of the water, and set aside in a warm place for seven days, agitating frequently. Decant the aqueous solution, filter it through a moistened filter, washing the residue with sufficient water to make up to 16 oz.

By the addition of soap to such solutions a larger amount of cresols and phenols can be worked into them, and a fluid obtained which mixes with water to form an emulsion. This seems to have been first taken advantage of in the preparation of Jeyes' Disinfectant, which is the subject of letters patent, taken out at various times since 1877, and many other manufacturers have followed upon similar lines. In the manufacture of Jeyes' fluid and creolin particular care is taken to exclude crude oils containing phenol, the claim of the manufacturers being that the cresols, of which it is chiefly composed, have not the fatal characteristics of carbolic acid.

One of the best starting-points for the preparation of such soluble fluids is the 'creosote' obtained from blast-furnaces, which is rich in cresols and contains comparatively little phenols. The proportions used are :—Creosote 30 parts, soft soap 10 parts, and solution of soda (10 per cent.) 30 parts. For creosote, coal-tar oil boiling between 170° C. and 230° C. may be used. The ingredients are to be boiled together for an hour, then set aside to settle, when the dark fluid is drained from any oily portion floating upon the top. It is preferable to form the soap in the mixing thus :—Boil together 1 gal. of crude carbolic acid (or 'oils' if cheapness is required) palm oil 1 lb., soda ash 3 lbs. and water 2 gals. for two hours, replacing water so as to maintain a volume of at least 2½ gals. Set aside for several days and decant the clear brown syrupy fluid. Such solutions become milky when mixed with water, but when alcohol instead of water is used to dissolve the alkali water-soluble solutions are the result. These are only available for surgical purposes owing to their cost. Eucalyptus oil and similar essential oils may be added to these disinfectants with benefit so far as odour is concerned. Resin oil may be used instead of palm oil with advantage, as the resin soap is a much better emulsifier.

Izal is not related to carbolic acid, although obtained from coal. The substance from which it is obtained is a brown oil (s.g. 1·055), one of several products yielded in coking coal. This oil on fractionation furnishes certain oxidised compounds, amongst them a thickish amber-coloured oil containing the hydroxyl group. This is izal oil. It is perfectly free from carbolic and cresylic acids, and in the pure state has no irritating action upon the skin. For disinfecting-purposes the oil is made into a 30-per-cent. emulsion with gelatine and water.

Various pheneloid bodies are obtained from blast-furnace gases, much of the 'creosote oils' of commerce being of this origin, and attempts have been made to displace carbolic acid by them, without, however, much success. It may be said, generally, regarding this subject that the popularity of carbolic acid, and of half-a-dozen other disinfectants, is so great that it is only by the expenditure of much money in advertising that any new disinfectant can get a foothold. Every year a large number of disinfectants are patented, and the fact that the variety of the retailer's stock of this class of goods changes but little is the best evidence of the fate meted out to most of them. We indicate briefly the composition of some other disinfectants which are or have been popular.

Aminol (Woolheim's patent, No. 16,242, 1888).—Essentially a mixture of methylamines obtained by distilling herring brine with lime.

Bromidine (Borland's patent, No. 6,191, 1886).—A mixture of bromide and bromate of sodium (prepared by saturating bromine with soda) and sodium acid sulphite in molecular proportions.

Bromonaphthalene Candles. The compound in these on burning gives free bromine. Patented by the late Dr. Alder Wright, 1893, No. 4,950. Candles containing iodoform and other decomposable iodine compounds have also been introduced.

Burnett's Solution.—Patented by Sir W. Burnett in 1838. Strength, 1 lb. of zinc chloride to 5 gals. of water, for preserving wood; but the fluid sold for disinfecting-purposes has a specific gravity of 2·000, which is equal to about 80 per cent. of the chloride, and appears to be made by allowing the solid chloride to deliquesce.

Campho-phénique.—A compound (claimed not to be a mixture) of 505 parts of absolute phenol and 495 of camphor, the ingredients being combined as vapours.

Chloralum. — Introduced by the late Professor Gamgee, and consisting of a solution of impure aluminium chloride, substantially 2 lbs. of the chloride to 1 gal. of water.

Condy's Fluids contain (*green*) manganate and (*red*) permanganates of alkalies and other salts, the nature of which does not appear to have been accurately determined. Liq. potass. permang., B.P., is an imitation of the red fluid.

Crimson Salt.—Patented by Tweedie and Hartin in 1884. A mixture of potash alum 8 parts, common salt 6 parts, borax 1 part, and potassium permanganate 1 part.

Dupré and Hake's (patent 4,283, 1887).—A mixture of manganate of soda with powdered kieserite, or with sulphate of lime, sulphate of zinc, or boric acid.

Eucalyptus Disinfecting-powder.—Borax 1 lb., ground gypsum 5 lbs., eucalyptus oil 2 oz.

Lauraline. — Naphthalene scented with camphor and eucalyptus oil, and moulded into cakes.

Lee's Disinfecting-fluid (patent No. 1,738, 1893).—A mixture of bleaching-powder 28 lbs., camphor 14 lbs., and black tar varnish 50 gals. Allow to stand eight days, and use the fluid as a paint for urinals.

Salufer.—Mr. W. Thompson, of Manchester, introduced sodium silicofluoride in cubes under this name.

Sauridon.—A Dorset shale is distilled. The residue is powdered, and with the powder is mixed a proportion of the fractional distillate, which appears to be of cresylic nature.

Terebene.—Introduced by Dr. Francis T. Bond, and presumably made in the old-fashioned way—viz., treating oil of turpentine with 5 per cent. of strong sulphuric acid, exposing for several days, then washing with water.

Tuson's Disinfectant.—Patented by the late Professor R. V. Tuson in 1887 (No. 12,222). A solution of 3 lbs. of zinc chloride and 2 oz. of corrosive sublimate in ½ gal. of water, and saturated solution of sulphurous acid added to make 1 gal.

Thiocamf.—A liquid formed by the action of sulphur dioxide on camphor, suggested by Professor Emerson Reynolds for giving off sulphurous acid spontaneously. Contains about 32 per cent. SO_2.

Urinal-cakes.—(1) Naphthalene fused and cast in suitable moulds. (2) Fused calcium chloride. (3) A mixture of equal parts alum, copper, iron, and zinc sulphates and resin, fused and moulded. (4) Boric and salicylic acid of each 10, potassium permanganate 40; powder and make into a cake with soluble glass 40 parts.

Weaver's Periodates. — A solution of calcium iodate. Was strongly recommended by Dr. Klein in 1887. See *C. & D.*, xxxiv., p. 573.

It will be seen from some of the foregoing that metallic chlorides and sulphates are used as disinfectants. They are not without value, but at the best it does not amount to much.

Sulphur Candles are made by fusing sulphur, pouring it into moulds, and placing a wick in the centre of the mass, or adding a cone of sulphur and nitre or similar substance. The wicks and cones do not ignite freely without the addition of nitre, a chlorate, or something similar, and such additions are covered by existing patents.

WRITING-MATERIALS

A POPULAR lecturer has lamented the decay of penmanship. This, he says, is the age of the typewriter and the shorthand clerk. With them individuality goes out, the soul of correspondence dies. The sentiment is pessimistic, and were it ours this chapter would not be written, for from first to last it treats of ink—especially writing-ink.

Galls and logwood are the principal sources of the colour-bases of inks. Black ledger-inks and blue-black inks are made from the former, and those chameleon-tinted fluids which range in colour from bright red to violet, and dry more or less black, owe their peculiarities to the colouring principle of logwood. It is a necessary characteristic of writing-inks that they should possess a certain indefinable degree of fluidity; they should be so dark as to be readily seen when written on official blue paper; they should dry with fair rapidity, or blot without being obliterated, and should darken rather than fade with age. There is no kind of ink which fulfils all these requirements equally. Logwood inks have the advantage in immediate conspicuousness, but they are very prone to lose fluidity and to fade with age. On the other hand, the fluidity of gall inks can be admirably and unalterably adjusted, and writing done with them, although it may fade, can be restored after generations of exposure; but such inks of themselves lack colour, and require the addition of something to give temporary colour.

The properties here referred to are explained when we examine the chemistry of inks. First, in regard to those made from galls. Here we are dealing with an ink-basis which contains tannic acid and very little gallic acid. These acids in themselves are colourless, but have the property of combining with ferrous salts to form colourless ferrous compounds which on exposure to the air gradually acquire an intense black colour. This change may be partly effected in the ink itself, as in the old-fashioned black writing-ink, which, owing to exposure in bulk, contains the colouring element as a ferroso-ferric gallo-tannate, or, as in blue-black ink, we may have an almost pure ferrous gallo-tannate in semi-solution with the addition of the blue colouring principle of indigo or of aniline blue. The iron is an essential constituent of these inks, and remains on the paper after the organic matter has faded through years of exposure.

Most logwood inks are simply dyes, and are not in metallic combination. It is the hæmatoxylin of the logwood, rather than the tannin, which is utilised by the ink-maker. By the addition of oxidising agents, such as potassium chromate, the hæmatoxylin is changed to the more powerfully colouring body hæmatein, whereby the brilliance of these fluids is secured. The so-called aniline inks are solutions of synthetic dyes. They require little skill in compounding, are very pretty, and somewhat evanescent.

WRITING-INKS FROM GALLS

The Common or Turkey Gall is the kind most used in ink-manufacture. Many qualities of galls are obtainable, but they may conveniently be grouped under the commercial terms ‘blue,’ ‘green,’ and ‘white.’ Their value is in the order given. There are also galls having a similar appearance, such as those from Corea, but their value is much lower. A poor gall means a poor ink. Therefore, use only the better qualities, which can be fairly well judged from the Mincing Lane prices. The shillings of cost per cwt. form a good index to the tannin percentage of the galls. For example, a blue gall at 70*s.* per cwt., a green at 60*s.*, and a white at 50*s.* may yield 70, 60, and 50 per cent. of tannin (gallo-tannic acid)—seldom so much, perhaps; still, relatively, the monetary value and the tannin value are on a par. The best Turkey galls rarely contain more than 70 per cent. of tannin.

Chinese Galls are also used in ink-making. Many consider them to be far superior to the Turkey sort. Chinese galls are derived from a species of *Rhus*, and appear in curious forms, some resembling a short locust bean, twisted and coming to a point where the gall had been attached to the leaf-stalk of the tree. From this shape there are many forms up to the egg-like gall, which predominates. Externally these galls are grey in colour, but when broken we find the horny substance to be reddish brown. These galls are very rich in gallo-tannic acid, 70 per cent. being a common figure. Chinese galls require to be treated differently from the Turkey galls. While the latter galls contain an amount of extractive and mucilaginous matter, which some consider objectionable, they have a natural 'ferment,' which induces in watery decoctions of the galls that change of the tannic acid to gallic acid which is so desirable in making ink. Chinese galls do not contain this ferment, so that if they be used in any of the recipes wherein Aleppo galls are indicated a teaspoonful of yeast must be added to every gallon of decoction, and fermentation allowed to proceed for twenty-four hours before adding the iron salt, &c., or they can be treated in the manner described in a succeeding page.

The aim of the ink-maker is to extract from the galls as much of the tannin principle as possible, and to add sulphate of iron in sufficient quantity to combine with this principle. Rule of thumb is often the guiding factor in this, but it is possible to observe more precise rules in the art. These have been well expressed by Dr. Inglis Clark in a graduating thesis of which an abstract was published in *The Chemist and Druggist* of July 30, 1892. From that we quote the following passages as being an admirable exposition of many of the difficulties which are met with :—

'Towards the beginning of this century a Dr. Lewis made some attempts to place the manufacure of ink on a satisfactory basis, and he succeeded so far as to determine that an excess of iron salt in the ink is detrimental to its permanence, such ink becoming brown on exposure. Three parts of galls to 1 part of ferrous sulphate were the proportions which he fixed upon as the best. He did not use boiling water in extracting the galls, and this has to be taken into account, for cold water would not, as he used it, extract more than half of the gallo-tannic acid from the galls. Dr. Lewis was the first to introduce logwood as a tinctorial agent, and he made the interesting and important observation that acetic acid in the menstruum provides an ink of greater body and blackness than sulphuric acid does—a circumstance due to the smaller resistance of acetic acid to the formation of iron gallo-tannate. In 1798 Ribancourt determined that an excess of galls is quite as injurious to the permanence of ink as an excess of iron. Dr. Bostock communicated a paper to the Society of Arts in 1830, in the course of which he stated that the tannin, mucilage, and extractive matter are, "without doubt, the principal causes of the difficulty which is encountered in the formation of a perfect and durable ink. For a good ink the essential ingredients are gallic acid and a sesqui-salt of iron." In this point Dr. Bostock peculiarly hit the mark. Owing to his working with galls he was unable to make decisive experiments; but he concludes, and that rightly, that in proportion as ink consists merely of gallate of iron it is less liable to decomposition and any kind of metamorphosis.'

Dr. Clark's own investigation showed that for a blue-black ink gallic acid alone gives, with sulphate of iron, a richer ink than one of tannic acid and the sulphate, and this is corroborated by the popularity of Stephens's blue-black ink, which is understood to be made from gallic acid. The best proportions, he found, are 150 parts of sulphate of iron and 100 parts of gallic acid. It is advisable, however, not to discard tannin altogether, owing to the slow blackening of the gallic-acid ink, and a little tannin gives initial blackening and body, while it is absolutely necessary for copying-ink. Initial blackness can also be ensured by oxidising 21 per cent. of the sulphate of iron, without adding extra acid.

These considerations in regard to the relative merits of gallic and tannic acids do not apply to the common black gall ink, in which we have the acids combined with iron in a more or less oxidised state. Blue-black ink was originally coloured with indigo-blue, and although that is rapidly being replaced by aniline-blue (which is equally effective, and exerts no disturbing influence upon the gall compound), some hints in regard to the indigo-blue are necessary. Apart from the mere colour which the indigo imparts, it has been assumed that the indigo-paste used keeps the iron gallo-tannate in solution. Any virtue of this kind which indigo-paste possesses is more likely due to the sulphuric acid which it contains than to the indigo itself. The essential part of the paste required is the sulpho-indigotate of sodium, now commonly called indigo-carmine. The commercial paste contains varying proportions of free sulphuric acid, and it is necessary in ink-manufacture that only the minimum of this constituent should be admitted. Paste containing 1 per cent. or less of free sulphuric acid has been found by experience to be most suitable for the purpose. An excess of acid in the ink corrodes pens, delays the darkening of writing, and sometimes perforates the paper. Apart from these objections, up to a certain point sulphuric acid is advantageous to the ink, and just the opposite after that point. The worst feature about indigo-coloured ink is that the colour gradually fades to a pale green.

Gall infusion prepared with hot water is not suitable for a blue-black ink, whilst a cold-water infusion is. In the latter case a comparatively small percentage of tannin is extracted from the galls, while much is extracted with hot water, and the consequence is that on adding the indigo-blue the colour of the latter is not brought out as it should be. Substantially the same thing occurs with ink made with the respective acids, although the blue colour remains for a considerable time unimpaired in a tannin ink, and it appears to be due to the fact that ferrous tannate reduces indigo-blue to indigo-white—a change which the low reducing-power of ferrous gallate does little to effect. The vegetable matter present in common inks facilitates the alteration and precipitation of the indigo.

We have now reached a point at which the application of the principles here described may be applied, and there is no better basis for that than the well-known Edinburgh Formula, which was published in *The Chemist and Druggist* many years ago. It is as follows:—

Blue-black Ink

Blue Aleppo galls (free from insect-perforation)	℥ivss.
Bruised cloves . .	ʒj.
Cold water . . .	Oij.
Purified sulphate of iron .	℥iss.
Pure sulphuric acid .	♏xxxv.
Indigo-paste (neutral or nearly so) . . .	℥j.

Place the galls, when bruised, with the cloves in a 50-oz. bottle, pour upon them the water, and digest, with daily stirring, for a fortnight. Then filter through paper into another 50-oz. bottle. Get out, also, the refuse of the galls and wring out of it the remaining liquor through a strong clean linen or cotton cloth into the filter, in order that as little as possible be lost. Next put in the iron, dissolve completely, and filter through paper, then the acid, and agitate briskly; lastly, the indigo, and thoroughly mix by shaking. Pass the whole through paper. Filter out of one bottle into the other till the operation has been completed. On a large scale this fine ink may be made by percolation. No gum or sugar is required, except when intended for copying; then 5½ oz. galls should be used and 3 dr. of sugar.

We have never met with blacker or more permanent writing than that done with this ink; but we give fair warning to manipulators that they must be exceedingly careful to observe the preliminary principles, for we have seen ink turned out of all shades—from pea-green to bright blue—simply on account of the indigo-paste.

We have had good results by omitting the sulphuric acid and substituting for the indigo-paste a drachm of indigo-carmine in powder. This substance has already been referred to. It gives a beautiful colour, and after adding it to the gall and iron mixture the product should be well shaken and set aside for a week before decanting the clear ink. If we omit the acid and indigo-paste, the above recipe is in all respects a model one, and it may be used for the aniline blue-black ink, which is obtained by adding 2 scruples of methyl blue to the 2 pints of liquor.

We have already stated that Stephens's Blue-black

Ink is supposed to be made from gallic acid direct, and there is a tradition, long since exploded, that it is simply a solution of Prussian blue. There is, however, a formula for it published which deserves to be quoted in all its bareness. It is as follows:—

Galls	℥xv.
Ferrous sulphate	℥v.
Iron filings	℥iv.
Water	Oxij.
Indigo	℥ss.
Sulphuric acid	℥iij.

No directions are given as to how this peculiar compound is to be turned out as the bright blue fluid which is so popular. We have succeeded in tracing this formula back for nearly half a century, and then we lose all trace of 'Stephens.' We are inclined to believe, therefore, that it has simply been called Stephens's by some ingenious wight who got out of the formula an ink like the Aldersgate Street product. The formula is manipulated much in the same way as the first one; but in this case the indigo in powder is mixed with the sulphuric acid, allowed to stand for two days, then diluted with 15 oz. of water, and the iron filings added to neutralise the solution.

In regard to the use of Chinese galls, the fermentative treatment can be effected by exposing the dampened powder to the air for eight to ten days in a warm place, to favour the growth of mould and consequent change. This process is exemplified in Dieterich's method:—

Chinese galls in coarse powder	℥viss.
Powdered French chalk	ʒvj.
Rain or distilled water to	Oij.

Damp the powdered galls and place in a warm room (70°–80° F.), sprinkling water over the mass from day to day, until in from eight to ten days or longer it becomes mouldy. Then heat the mass for an hour on a water-bath with 16 oz. of water, strain, and press with the hands. Repeat the infusion with another 16 oz. of water and again with 8 oz. Add the French chalk to the strained liquors, agitate occasionally during twenty-four hours, then filter, washing the filtrate with water to 2 pints.

This is the basis for the ink. To make a blue-black proceed as follows:—

Decoction of galls	Oij.
Solution of ferric chloride (10 per cent.)	℥iiss.

Mix, allow to stand for a fortnight in a closed bottle, and filter

Then add to the filtrate

Phenol-blue, FFF	ʒj.
Carbolic acid	℈j.
Distilled water	℥xvj.

Dissolved by the aid of heat. Allow the ink to stand for a week longer in a dark and cool place, and decant from any sediment which may have formed.

As the gall and iron mixture is the ink, and the phenol-blue the tint, it follows that other tints may as readily be obtained. The following may be substituted for the blue :—

Deep Black.—Use phenol-black B ʒiij.
Violet-black.—Use phenol-blue FFF ʒss. and ponceau RR ℈ij.
Red-black.—Use ponceau RR ʒij.
Green-black.—Use aniline-green D ʒij.
Greenish Blue-black.—Use phenol-blue FFF ʒss., aniline-green D ℈iiss.

The formulas generally seen for making Blue-black Ink Direct from Tannin are fairly exemplified in the following one :—

A. Dissolve 1 lb. of tannin in sufficient distilled or rain water to make a gallon.

B. Dissolve 14 oz. of sulphate of iron and ʒv. of pure sulphuric acid in sufficient water to make half a gallon.

C. Dissolve ʒvj. of methyl-blue in 8 oz. of spirit and make up to half a gallon with water.

Mix these solutions and rinse out the bottles with enough water to make the bulk of the mixture 2½ gallons.

This formula produces a beautiful ink very quickly, but on keeping it deposits, and is apt to become a trifle slimy. This result is due to the gradual change of the tannin (as described in the introductory remarks) through the influence of the sulphuric acid and oxidation. This disadvantage is obviated in the next formula :—

Tannin	℥iij.
Water	℥iij.
Solution of ferric chloride (10 per cent.)	℥vij.
Hydrochloric acid	ʒiiss.

Heat in a large glass flask or bottle on a water-bath for five or six hours, then add

Hot water to	Oij.

Continue to heat for an hour longer, then set the ink aside for a fortnight in a cool place and filter. To the filtrate add a mixture of

Phenol-blue FFF	ʒij.
Carbolic acid	℈ij.
Sugar	ʒiiss.
Water to	Oiij.

Dissolved by the aid of heat. Allow the ink to stand for a week in a cool, dark place before decanting.

In the last the conversion of the tannin into gallic acid is effected by heating with the hydrochloric acid, and thus the ink becomes less prone to change than when made in the cold, and without the preliminary hydrolysis. As in the case of Dieterich's gall ink, different tints may be imparted to this tannin ink by the use of the colours mentioned, which it will be observed are the quantities for 3 pints of ink.

Common Black Gall Inks.—The ideal ink of this class —that is, the old-fashioned ink which our forefathers used, and which is still considered by bookkeepers to be unexcelled (albeit it is the thing to make crusty pens)—is represented in the following recipes :—

A. **Payen's**

Bruised Aleppo galls	15 lbs.
Sulphate of iron	10 lbs.
Gum arabic	20 lbs.
River-water	20 gals.

In a cylindrical copper boiler as deep as it is wide put the galls with 15 gals. of water. Cover the boiler and raise the liquor to boiling, maintaining that temperature for three hours, adding boiling water from time to time to replace that which is evaporated. At the end of the three hours draw off the liquor and let it deposit, and add to the clear solution the droppings from the marc on a filter. Separately dissolve the gum in as little warm water as will take it up, and add this to the gall decoction. In the remainder of the water dissolve the sulphate of iron, and stir this solution in with the rest.

B

Aleppo galls, bruised	℥iij.
Sulphate of iron	℥j.
Gum arabic	℥j.
Water	℥xxxiij.

Heat the galls and the gum in 30 oz. of water on a water-bath for two hours, replacing water lost by evaporation ; then add the sulphate of iron dissolved in 3 oz. of water. Bottle without straining, cork loosely, and set aside for three weeks to ripen (two in the summer). Pour off as wanted.

This is also made by macerating the whole of the ingredients in the water for a month.

The second of these should be kept in casks with the heads out, and stirred frequently. It should be tried from time to time, and should not be allowed to become too black, or it will be less fluid. When the right colour is reached the casks should be covered and left to deposit, the ink drawn off and put into earthenware bottles, well corked and sealed. The following formulas are also satisfactory and cheap.

C

Bruised Aleppo galls	℥xij.
Logwood	℥ij.
Sulphate of iron	℥iv.
Alum	ʒiss.
Carbolic acid	ʒj.
Common salt	ʒij.
Gum arabic	℥iij.
Water	a sufficiency

Macerate the galls and logwood in ½ gal. of water for two days, strain, and repeat. In the mixed liquors dissolve the sulphate of iron, alum, and gum arabic, and add the carbolic acid and common salt.

D

Tannin	℥j.
Water	℥x.
Solution of perchloride of iron (10 per cent.)	℥ss.
Pure sulphuric acid	♏vj.
Water	℥vij.
Schaal's deep black E	ʒiiss.

Dissolve the tannin in the first water, and the deep black in the second. To the latter add the iron solution and the acid, then mix the solutions.

'C' is an ink with very good 'body,' but, like all gall inks to which logwood is added for tinctorial effect, the writing is apt to go brown in a few years, although it never fades utterly. The beautiful appearance of the ink in use is, however, an attraction difficult to resist.

A great variety of formulas have from time to time been printed in *The Chemist and Druggist*, some of them having special names, and when they are all brought together we find that they more or less resemble those which are printed here. Others appear not to exist elsewhere than in technical journals, and it is unnecessary to do more here than to refer to such formulas in the briefest possible way:—

Alizarin Ink

Stated by one authority to be made by adding 2 dr. of indigotin to 2 pints of Dieterich's gall ink, without the phenol-blue. Properly, however, it is a logwood ink, and for convenience we mention it here:—

Extract of logwood	ʒvj.
Alizarin paste	℥iss.
Carbonate of soda	ʒij.
Water	℥xxx.

Dissolve the carbonate in a little water, add the alizarin paste, and, lastly, the extract of logwood dissolved in the rest of the water, and filter. Transfer the liquor to a W.Q. bottle, drop in a few nails or iron filings, and expose the whole to the sunlight for about a week, with occasional shaking. Decant and add carbolic acid ʒj.

Bank of England Ink

Similar to formula 'B,' with the addition of glycerine ʒiss. to each pint.

Bean's French Ink

A gall ink also like 'B,' but containing tormentil-root (1 part to each 5 parts of galls) and lampblack, sugar-candy, honey, and white sugar. These latter constituents convert it into a copying-ink.

Chaptal's Ink

Similar to ‘C,’ without the second three ingredients, and made with calcined sulphate of iron. For a pint of the ink ʒiss. of the calcined sulphate is used.

Counting-house Ink

A gall ink like the Edinburgh formula (page 356), with the addition of sulphate of copper ℥ss., gum ℥ij., and glycerine ℥j. to the quantity given.

Document Ink

Substantially Dieterich's blue-black (page 357).

Parliament Ink

Similar to counting-house ink without the gum.

Travellers' Ink

Blotting-paper is saturated with a solution of methyl-violet, aniline-blue, or any other aniline-colour, to which 10 per cent. of acacia mucilage has been added. Four sheets of the paper are pressed together, dried, then cut into ½-inch squares. One of these squares put into a teaspoonful of water makes ink.

Treasury Ink

In 1 pint of ‘B’ dissolve nigrosine ℈j.

Vanadium Ink.—Berzelius was the first to suggest the use of vanadium tannate as a writing-ink, which he made by adding a solution of metavanadate of ammonium to a decoction of galls. This forms a deep black liquid containing no precipitate. Alkalies do not act upon the writing; acids turn it blue; and although chlorine destroys the black colour it does not efface the writing. Berzelius said so about 1830, and the statement has become classical. It is doubtless correct, but a far better use for vanadium has been found in the preparation of aniline-black. The ink may be made in several ways. One of the simplest is to add to a pint of Chinese-gall decoction (page 357) a scruple of vanadate of ammonium, or, as Siemens suggests, dissolve 1 oz. of tannin in 16 oz. of water; to this add 1 oz. of acacia mucilage and a solution of 15 gr. of vanadate of ammonium in sufficient water to make the ink measure 1 pint. Our experience with vanadium ink is disappointing.

LOGWOOD WRITING-INKS

The second, and in many respects highly important, class of writing-inks which we have to deal with are those made from logwood or the extract thereof. Reference has already been made in the introduction to the peculiarity which distinguishes gall and logwood inks. The former may be said to be ferro-organic dyes; the latter are purely organic. The distinction as affecting logwood may be further explained, for anyone who has experience in the manufacture of logwood ink is aware that slight alterations of details and conditions in manufacture have occasionally very notable effects upon the product.

Logwood in its natural and fresh-cut state is a yellow wood, which on exposure to the air and self-fermentation acquires the purplish colour with which chemists are familiar. The change is due to the alteration of the active principle of the wood, hæmatoxylin ($C_{16}H_{14}O_6$), a body which can be obtained in a monohydrated condition as yellow crystals. This body is very readily oxidised, either by exposure to the air in presence of moisture, or through the influence of oxidising agents, such as chromate of potassium. There is formed a new and intensely tinctorial body, hæmatein ($C_{16}H_{12}O_6$), which, it will be seen, is simply hæmatoxylin *minus* two atoms of hydrogen. Hæmatein of itself is a red body, not very soluble in water—indeed, sparingly soluble—but it forms water-soluble compounds (they cannot be called 'salts') with ammonia and other alkalies. The ammonia compound is $C_{16}H_{12}O_6.2NH_3$, which dissolves in water with a purplish hue, and to which all other alkali combinations are akin in colour. These compounds are split up by acids—even acetic acid—hæmatein being precipitated. Logwood contains very little tannin, its astringency being due chiefly to hæmatoxylin. For that reason the inclusion of metallic salts, such as iron sulphate and copper acetate, in logwood inks has for its object the fixation of the colouring principle hæmatein rather than the production of an inky compound such as we find in gall inks. Most of the metallic salts act as mordants, and so do the chromium compounds. These observations will now be of service in considering the various formulas. Runge (who lived early in the nineteenth century) appears to have been the first to take advantage of the peculiar properties of logwood in ink-making. Before his day it was used in conjunction with galls—therefore empirically. He started out in search of an ink which (1) would not deposit, (2) would adhere well to the paper, (3) would not be affected by acids, and (4) would not corrode steel pens. He 'succeeded in obtaining a composition of the kind required, very simple in its preparation, and free from vinegar, gum, copperas, blue vitriol, and even nutgalls. The fluid is prepared,' he continues, 'by simply adding 1 part of chromate of potash to 1,000 parts of decoction of logwood, made by boiling 22 lbs. of logwood in a sufficient quantity of water to give 14 gals. of decoction. To this decoction, when cold, the chrome salt is gradually added, and the mixture well stirred. The addition of gum is injurious. . . . It appears astonishing what a small quantity of the chrome salt is required to convert a large quantity of decoction of logwood into a black writing-fluid.'

The last remark is of interest. Practically it requires 1 part of potassium chromate to completely oxidise 3 parts of hæmatoxylin, but this quantity is never used in making logwood ink. Thus, in Runge's own formula, supposing the decoction contains all the hæmatoxylin in the wood used, the proportion of chromate employed is somewhere between one to fifteen and one to ten—too small a proportion for complete oxidation. Theory would therefore seem to point to a greater proportion of chromate than Runge indicates, but practice is entirely against it. What is wanted is to oxidise part of the hæmatoxylin only, and leave the rest to change by age or after writing. Moreover, excessive oxidation also means thickening, owing to the formation of a glutinous-like body, which makes the ink stringy and objectionable. That, indeed, is the objection to Runge's own ink. It is never made so now; but the following simple modification of it is excellent. Here we may say that extract of logwood may be economically used in ink-making. It may be reckoned as six times stronger than logwood itself.

I

Extract of logwood . .	℥ss.
Carbonate of soda (crystals)	℈iiss.
Neutral chromate of potash . . .	gr. xiv.
Water to . . .	Oij.

Dissolve the extract in 38 oz. water, allow to settle, decant, and boil. Add the soda, and when cold add, with constant stirring, the chromate dissolved in 2 oz. of water.

II

Extract of logwood . .	ʒx.
Bichromate of potassium .	ʒss.
Chrome alum . . .	℥iss.
Oxalic acid . . .	ʒiiss.
Carbolic acid . . .	gr. xv.
Water to . . .	℥xxxv.

Warm the extract with 6 oz. of water on a water-bath, stirring constantly until the solution is uniform; then add a pint of warm water and maintain the temperature a little below the boiling-point —say, 180° F.—for ten minutes. Allow the solution to become quite cold, so that the resinous and other insoluble matter may be precipitated. Decant from this, and again heat to 180° F., while adding very gradually a solution of the bichromate, chrome alum, and oxalic acid in 5 oz. of water. Continue to heat for half an hour, then dilute to the required volume, adding the carbolic acid to the water. Set aside for a few days to settle, and decant the clear ink.

Carbonate of soda prevents the ink becoming thick. The ink made from No. I. formula is nice, writing a purplish-black colour. No. II. is a very beautiful ink of the Dichroic Type.

Unless otherwise stated, rain or distilled water should be used in making logwood ink. Water of more than two degrees temporary hardness gives peculiar and generally unsatisfactory results. The following formula is a Russian one, and in our own experience, as well as in that of many *Chemist and Druggist* subscribers, gives one of the finest inks possible:—

III

Extract of logwood . .	ʒxxv.
Lime-water . . .	℥xxv.
Hydrochloric acid . .	ʒv.
Bichromate of potassium .	gr. xlv.
Carbolic acid . . .	gr. xlv.
Gum arabic . . .	℥j.
Distilled water to . .	Oiiss.

Reduce the extract to coarse powder and in a quart basin mix it gradually with the lime-water. Heat on a water-bath until solution is effected, then add the acids and continue to heat for half an hour. Set aside to cool, and decant the clear liquor into a 7-lb. earthenware jar. Add to it gradually, and with constant stirring, the bichromate of potassium dissolved in 10 oz. of water, next the gum, also dissolved in water, and make up to the required volume. Set the ink aside for several weeks before using.

By using ʒiv. of hydrochloric acid and ʒij. of bichromate a violet ink is obtained. As it is, the above ink writes red (like Antoine's well-known fluid), and the writing becomes of a beautiful black colour. Sometimes, owing to the variable nature of logwood extract and weak lime-water, the ink is dreadfully thin and weak-looking; for the latter reason we have found it to be, on the whole, more satisfactory to use, instead of lime-water, a scruple of fresh-slaked lime shaken up with 25 oz. of tap-water. A similar modification is provided in the next formula. 'Hematine' is a sort of purified logwood extract. It is an article largely used in the dye trade, and should not be confounded with hæmatein, of which it contains about 10 to 20 per cent., with 50 to 55 per cent. of hæmatoxylin:—

IV

Hematine	ʒiv.
Slaked lime	gr. xij.
Distilled water	℥xv.

Heat gently to dissolve. Allow to cool and deposit; decant and add

Carbolic acid	gr. v.
Hydrochloric acid	♏xl.
Distilled water	℥j.

Mix, allow to settle for half an hour, and decant again, and add gradually, and with constant stirring

Chromate of potassium	gr. viij.
Distilled water	℥ij.

Finally, add an ounce of fresh mucilage and make up to 1 pint with distilled water. This is a true violet-black ink.

The foregoing are all more or less simple. We conclude the series with several examples of the more complex inks which have logwood as their basis:—

V

Extract of logwood (extra fine French)	℥iij.
Oxalate of ammonium	℥j.
Sulphate of aluminium	℥j.
Oxalic acid	ʒij.
Bichromate of potassium	gr. 75
Salicylic acid	gr. xv.
Distilled water	a sufficiency

Powder the first four ingredients and dissolve in 25 oz. of water by boiling. To this add the bichromate dissolved in 5 oz. of warm water, then the salicylic acid, and set aside for two or three weeks. Decant and bottle.

'One of the best copying-inks in existence.' It is like the celebrated French copying-ink.

VI

Liquid extract of logwood	℥vj. ʒij.
Indigo carmine	ʒv.
Alum	ʒvj.
Sulphate of iron	ʒj.
Sulphate of copper	gr. xlv.
Glucose	℥ss.
Gum arabic	ʒss.
Chromate of potassium	ʒss.
Salicylic acid	gr. v.
Water	℥xxxvj.

VII

Liquid extract of logwood	℥vj. ʒij.
Sulphate of iron	ʒij.
Chromate of potassium	ʒss.
Indigo carmine	ʒiv.
Gum arabic	ʒss.
Glycerine	℥ss.
Salicylic acid	gr. v.
Vinegar	℥iij.
Distilled water	℥xxx.

In each case mix the extract of logwood with a pint of the water and heat to a temperature of about 200° F. for ten minutes. Then add the rest of the water (and, in the case of the first, the vinegar) in which the other ingredients have been mixed in the order given above and dissolved. Mix thoroughly, and set aside for a few days to settle.

VIII

Extract of logwood	ʒxij.
Distilled water	℥xxiv.

Powder the extract in a mortar and dissolve in the water without heat, then add

Potassium chromate	gr. xxx.
Distilled water	℥j.

Set aside for twenty-four hours, decant the clear liquor, and add to it the following solution:—

Oxalic acid	gr. xlv.
Ammonium oxalate	ʒv.
Aluminium sulphate	℥j.
Distilled water	℥vj.

Again set aside for twenty-four hours, then boil and add ℥iss. dilute acetic acid. Bottle, and set aside for at least a fortnight before decanting the clear ink.

IX

Extract of logwood	ʒx.
Oxalic acid	gr. 75
Aluminium sulphate	℥j.
Glycerine	ʒiiss.
Distilled water	℥xxv.

Dissolve without heat, and after twenty-four hours add to the clear liquor

Potassium bichromate	gr. 75
Distilled water	℥iij.

After twenty-four hours boil and add ℥iss. dilute acetic acid. Bottle, and at the end of a fortnight, or longer, decant from the sediment.

These are both writing-inks, No. VIII. being red-black, and No. IX. a beautiful violet-black.

Nos. VI. and VII. are for copying. The liquid extract is to be made by treating 1 part of extract of logwood with 5 parts of hot water for half an hour on a water-bath, then setting aside for a week, and decanting the clear portion.

Cheap Black Inks.—The following may be made extemporaneously. They are good enough as school ink, but not sufficiently permanent for general office work.

I

Aniline-black 'B'	℥ij.
Acetic acid	℥ij.
Gum arabic	℥ij.
Water	1 gal.

Put the aniline-black in a jar and pour the acetic acid, diluted with ℥viij. water, upon it. Separately dissolve the gum in a few ounces of water, add to the rest of the water, which pour into the jar, shaking well to dissolve.

II

Aniline-black	℥j.
Pyrogallic acid	℥ss.
Ferrous sulphate	℥ij.
Water	1 gal.

Dissolve the aniline-black and ferrous sulphate in most of the water, and the pyrogallic acid in the remainder. Mix the solutions.

III

Ac. pyrogallic.	℈x.
Ferri sulphatis	℈viij.
Sodii sulphit.	℈iv.
Mucil. acaciæ	℥ss.
Aq. destil. ad	℥xx.

Dissolve the first two in half the water, then mix with sodii sulph. dissolved in the remainder.

IV

Phenol-black 'B'	ʒv.
Distilled water	℥ij.

Mix, allow to stand for two hours, then add the following:—

Hot distilled water	℥xxv.
Sugar	ʒv.
Carbolic acid	gr. xv.
Pure sulphuric acid	♏v.

Shake occasionally until solution is complete.

COPYING-INKS

In composition copying-inks do not differ from ordinary writing-inks, sugar, glycerine, or gum arabic (one or all of them) being added to the latter in the proportion of 2 to 4 dr. to the pint. For single copies the addition of sugar, ℥ss. to the pint of a gall ink, makes a satisfactory fluid; but gum arabic is equally good, and the ink keeps better; best of all is glycerine ℥ss. and mucilage of acacia ℥ss. to 30 oz. of the writing-fluid. Ink to give a number of copies must have high tinctorial power, and for that reason red-black logwood ink, such as Antoine's, is preferred, honey or treacle, with a little gum, being used as the adhesive agent. The following formulas show how the inks are made direct:—

I

Aleppo galls	℥viij.
Alum	℥ss.
Brazil wood	℥ss.
Sugar	℥ss.
Malt vinegar	Cong. j.

Infuse for twenty-four hours in a glazed earthenware vessel, frequently stirring it; raise it to boiling-point, and boil down to two-thirds of its original volume. Strain, and add 1½ oz. dried sulphate of iron. Let it stand some days in the sun, and afterwards bottle.

II

Gall basis (page 357)	℥xxiv.
Aniline water-blue I.B.	ʒiiss.
Glycerine	ʒij.
Gum arabic	ʒv.
Sugar	ʒiiss.
Water	℥viij.

Mix, and set aside for a few weeks.

A ruby ink is made by using ʒiiss. of ponceau RR in place of the aniline water-blue in No. II. Both the inks and the copies ultimately turn jet black. Other colours are obtained with aniline-green D ʒiiss., deep-black E ʒv., or indigo-carmine ʒiiss., in place of the aniline-blue.

Violet

Methyl-violet BBB	℈j.
Sugar	gr. x.
Oxalic acid	gr. ij.
Distilled water	℥ij.

Dissolve.

Blue

Resorcin-blue	gr. x.
Sugar	gr. x.
Oxalic acid	gr. ij.
Distilled water	℥ij.

Dissolve.

Other aniline colours may be used similarly. These inks are very strong, and afford a dozen copies easily.

Professor Attfield's Copying-ink, to be used without a press, is made in the following manner :—' Reduce, by evaporation, ten volumes of ink to six ; then add four volumes of glycerine. Or manufacture some ink of nearly double strength and add to any quantity of it nearly an equal volume of glycerine.' Although, as the Professor says, this ink could not be 'used by all persons, at all times, under all circumstances,' with satisfaction, he has used it for a quarter of a century, apparently with good results. One simply writes with it on cream-laid paper and uses the copying-sheet as a blotter. It smears a little, but not much.

The Copying-pad known as the Hectograph, Graph, and by other names, was invented by two Germans, and was patented in England in 1878. The patent has accordingly lapsed, and anyone may make the composition, which consists of a mixture of glycerine 4 parts, water 2 parts, and gelatine 1 part, all by weight. The gelatine is immersed in the water until it absorbs it all ; the glycerine is then added, and the whole heated on a water-bath until solution is effected. It is then poured into a shallow tray, such as the lid of a tin jujube-box, and allowed to solidify. The ink employed is an aniline-dye solution. The original formulas are :—

Violet Ink

Methyl-violet	1 part
Water	7 parts
Alcohol	1 part

Red Ink

Rosaniline	2 parts
Water	10 parts
Alcohol	1 part

In each case dissolve the solids in the mixed liquids taken by weight.

The matter to be reproduced in facsimile is written with the ink upon well-glazed paper, and when the writing is dry it is transferred to the pad by placing the sheet of paper, face downwards, evenly upon the pad and rubbing with the hand. Care should be taken that there are no wrinkles upon the paper. Allow the paper to remain upon the pad for about five minutes, then pull it off carefully. Now take a piece of paper of the same size as the original, but not so highly glazed, and lay it upon the pad, going from top to bottom and smoothing it out evenly. A few seconds suffice to take the first copy; then take another, and so on to the extent of forty or fifty; but towards the end much longer contact is required, or slightly damped paper may then be used.

When the process is finished rub the face of the pad with a cloth or sponge damped with a mixture of water 7 and hydrochloric acid 1, then with pure water, to remove most of the writing, and set aside for at least twelve hours, when it will be ready for use again. Many other formulas have been proposed, but the following are sufficiently typical. Glue may, of course, take the place of gelatine:—

I

Gelatine	℥iij.
Water	℥iv.

Cut the gelatine small and soak for twelve hours in the water, then add

Glycerine	℥xx.

Heat gently until dissolved, and pour into a suitable flat box.

II

Gelatine (cut small). .	℥j.
Demerara brown sugar .	ʒj.
Glycerine . . .	℥vj.
Barium sulphate . .	℥iiss.
Water	℥iv.

Steep the gelatine in 3 oz. of water till soft, add the glycerine, and heat; then add the sugar and dissolve. Rub the sulphate smooth with the rest of the water and add to the mass, mixing well.

Violet Ink

Methyl-violet aniline .	ʒij.
Spirit	ʒij.
Water	ʒvj.

Mix.

Blue Ink

Resorcin-blue M . .	ʒj.
Acetic acid . . .	♏vj.
Glycerine . . .	♏xxv.
Rectified spirit . .	ʒj.
Distilled water to . .	℥iss.

Green Ink

Aniline-green D . .	ʒij.

Liquids the same as for blue ink.

To make these mix the liquids, warm, and dissolve the dye in the hot fluid.

Ink Powders and Extracts are for making ink extemporaneously by the addition of water. The quantities in the first two formulas are intended for a winebottleful of soft water, and may be put up in a suitable box or packet to retail at 6*d.* The powder is to be added to the water, and the mixture gently boiled for from fifteen to twenty minutes, and when cold the ink should be bottled and set aside for four weeks before using:—

	Plain	**Copying**
Tannin	℥j.	ʒix.
Dried sulphate of iron	ʒiiiss.	ʒiv.
Gum arabic	gr. 75	ʒiv.
Sugar	℈ij.	gr. 75
Aniline water-blue B	℈ij.	gr. 75

Gall-ink Extracts

I

Pulv. gallæ	℥v.
Ferri sulph.	℥iss.
Pulv. acaciæ	℥j.
Pulv. alumin. roch.	℥ss.

Mix and divide into 1-dr. powders, each of which should have a teacupful of hot water poured upon it; stir and when cold decant from the sediment.

II

Extract of logwood	℥v.
Dried carbonate of soda	℥ss.
Chromate of potash	℥ss.

Mix.

This should be put up in ½-oz. packets, each of which is sufficient to make a winebottleful of ink with cold water.

Aniline-ink Extract

Deep black E	℥j.
Sugar in coarse powder	℥j.
Potassium bisulphate	ʒj.

Mix.

For a gallon of ink.

Superior Logwood Extract

Extract of logwood	ʒx.
Aluminium sulphate	℥ss.
Potassium oxalate	ʒvj.
Potassium bisulphate	ʒj.
Potassium bichromate	ʒss.
Salicylic acid	gr. x.

Mix the coarse powders.

Sufficient to make 2 quarts of good ink by the addition of lukewarm water.

Ink-tablets

Powdered galls	℥ij.
Powdered sulphate of iron	ʒv.
Powdered sulphate of copper	gr. xv.
Powdered alum	ʒj.
Powdered sugar-candy	ʒiss.
Powdered gum arabic	ʒiiss.
Powdered cream of tartar	gr. xv.

Make into a stiff paste with a mixture of glycerine 1 part and water 2 parts. Mould in ½-oz. tablets and dry.

Each tablet for a pint of ink.

COLOURED WRITING-INKS

Such a change has come over this department of ink-manufacture in recent years, owing to the utilisation of aniline-colours, that the formulas for reds, blues, greens, &c.,

contained in the first fifty volumes of *The Chemist and Druggist* might be wiped out without much harm being done. But we do not propose to do that. One has a certain affection for that bright scarlet ink of days gone by which is an elegant preparation of Brazil wood that corrodes pens frightfully, but leaves wonderfully stable writing; and even the crimsons that we get from cochineal and carmine have their attraction. So, too, the blue from Prussian blue, and the green from copper salts. These we keep together, but for brightness of colour, general utility, and ease of manufacture there is nothing to equal the aniline-inks.

Carmine Red

Carmine	ʒss.
Solution of ammonia	℥ss.
Mucilage	ʒij.
Water to	℥iv.

Dissolve the carmine in the ammonia, and add the mucilage and water.

Cochineal Red

Cochineal	℥ss.
Gum arabic	℥ss.
Cream of tartar	ʒj.
Distilled water	℥viij.

Boil, filter, make up to 8 oz., and add

Alum	ʒij.
Spirit of cloves	ʒj.

Mix.

This is a very old form. The ink may also be made exactly in the same way as liquid cochineal, omitting glycerine.

Eosin Red

Eosin B	ʒj.
Solution of perchloride of mercury	℥ss.
Mucilage of acacia	ʒij.
Oil of lavender	1 drop
Rectified spirit	ʒij.
Distilled water to	℥iv.

Dissolve the eosin in the solution and 2 oz. of water, add the mucilage, and mix, then the oil dissolved in the spirit, and finally make up.

Brazil Red

Brazil wood	℥ij.
Solution of protochloride of tin	ʒij.
Mucilage of acacia	ʒij.
Water	℥xxxij.

Boil the whole together until the bulk is reduced to one-half, then strain.

Blue

Resorcin-blue M	ʒj.
Distilled water	ʒvj.

Mix and agitate occasionally for two hours, then add

Hot distilled water	℥xxiv.
Oxalic acid	gr. x.
Sugar	℥ss.

Shake well. This and other aniline inks can be perfumed by rubbing up a drop of otto of rose with the sugar before dissolving it in the hot water.

Orange

Aniline-orange	ʒj.
Sugar	ʒij.
Distilled water	℥viij.

Dissolve.

Green

I

Picric acid . . .	ʒij.
Boiling water . . .	℥vj.

Dissolve and add to a solution of

Indigo carmine . .	℥j.
Water	℥xxv.
Mucilage of acacia . .	℥ij.

Mix.

II

Water-soluble methyl-green	ʒiiss.
Distilled water . .	℥j.

Mix and after two hours add

Hot distilled water . .	℥xxx.
Sugar	ʒv.

Proceed as with the blue.

Violet

Methyl-violet, BBB .	ʒiiss.
Distilled water . .	℥j.

Mix and after two hours add

Hot distilled water .	℥xxx.
Oxalic acid . . .	ʒss.
Sugar	ʒiiss.

Mix thoroughly until dissolved. Set aside for a few hours to settle and decant.

Yellow

A solution of gamboge 1 part in water 5 parts and rectified spirit 1 part. Rub the gamboge with the spirit and the water, mix and filter.

Any other aniline colours may be used similarly to the green-ink formula.

White Ink is a mixture of exceedingly fine zinc-white with gum and water, such as: Zinc-white ʒij., white precipitate gr. v., mucilage ʒj., water ʒvj. Triturate the zinc-white and the precipitate with 2 dr. of water until perfectly smooth, then add the mucilage and the rest of the water.

Prussian-blue Ink is made by dissolving 1 oz. of soluble Prussian blue in 8 oz. of water to which 1 oz. of oxalic acid has previously been added. It requires the addition of ½ oz. of acacia mucilage. It is a fairly permanent ink, but is liable to attack steel pens.

Shoemakers' Inks should have exceptional body and penetrating power. They are used for inking the edges and soles of boots. The following are typical formulas based on analyses of popular American inks of this class:—

I

Crushed galls . . .	1 lb.
Extract of logwood . .	4 oz.
Water	½ gal.

Boil together for half an hour, strain, and wash the strainer with water to ½ gal. Again boil for ten minutes with 3 pints of water, to which ½ lb. of copperas and ½ lb. of gum arabic are added, and strain into the other decoction. Separately mix together—

Fine lampblack . .	6 oz.
Salicylic acid . .	3 dr.
Methylated spirit . .	8 oz.

To this add some of the ink to form a smooth cream, and mix with the bulk.

II

Nigrosin	1 oz.
Gall ink (without gum)	2 pints

Dissolve by vigorous shaking, and add to it the following solution :—

Ground shellac	2 oz.
Powdered borax	1 oz.
Water	12 oz.

Dissolve and strain.

Powder for Making Shoemakers' Ink

Powdered galls	℥ij.
Copperas	℥j.
Sulphate of copper	ʒss.
Powdered gum	ʒj.

Mix.

Directions. — Pour a quart of boiling water upon the powder and let it stand for a week.

MARKING-INKS

There is probably no article which brings the chemist and druggist so much into trouble as silver marking-ink. We need not enter into the causes of this until we have considered the formulas which are generally adopted for its preparation, and the two following are so typical that it is unnecessary to quote more :—

I

Nitrate of silver	℥iij. ʒij.
Sodium carbonate	℥iij.
Tartaric acid	ʒxss.
Solution of ammonia (·880)	℥iiss.
Archil	℥j.
Paste chlorophyll	℥j.
Powdered acacia	℥iiss.
Sugar	℥iss.
Water	a sufficiency

Dissolve the silver and soda salts separately, each in 2 pints of boiling water, and mix. Allow the precipitate to settle, decant the fluid, and collect the precipitate on a paper filter; wash with a pint of water, and, when drained, transfer to a mortar; add the acid (in powder) and mix. When effervescence has ceased add the ammonia solution, stir to dissolve, and transfer to a bottle containing the sugar (powdered). Mix the chlorophyll with 4 oz. of water and the archil, add the acacia to this, and, when dissolved, strain. Now add the ammoniacal solution and make up to 20 oz. with water.

II

Argent. nitrat.	℥j.
Potass. bitart.	℥j.
Liq. ammon. fort.	℥iss.
Archil	℥ss.
Pulv. sacch. alb.	ʒvj.
Pulv. acaciæ	ʒx.
Aquæ ad	℥vj.

Rub the silver and potash salts in a mortar with 1 oz. of water, add the ammonia, and to this add the other ingredients (previously mixed with 1 oz. of water), making up to 6 oz. with water.

Both of these are professedly ammoniacal solutions of tartrate of silver, but No. II. contains other salts. The principal objections made against silver inks are (1) burning of the fabric and (2) want of permanency. The first may occur (*a*) in the process of marking, (*b*) in the laundry.

It may be said of (*a*) that no silver inks are of an acid nature. The silver salts are not the cause of the burning, but in such an ink as No. II. we have an explanation of this—viz., in so far as nitrate of ammonia is present, and as ammonia salts are dissociated at high temperatures, when a hot iron is applied to the fabric, acid is freed for a time sufficient to act upon the fabric. This is not the case with No. I. carefully prepared, since only tartrate of silver is in solution.

(*b*) It will be noted that the effect of heating the writing is to reduce the silver tartrate to the metallic state, or, if insufficiently heated, to the oxide. If other silver salts than the tartrate be present they are not likely to be reduced further than to the oxide. By heating No. I. sufficiently, we have only metallic silver deposited in the fabric, and with No. II. oxide also. Now it has been proved that this oxide is the indirect cause of the burning of the fabric in the laundry. Chlorinated lime being used for bleaching-purposes, the hypochlorite of calcium therein contained reacts with the silver oxide to form chloride of silver and oxide of calcium, and the latter rots the fabric in time. On two points, therefore, formula No. II. is wholly objectionable.

Want of permanency may also be attributed to two causes —viz., (*c*) deficiency of silver and (*d*) thickness of the ink.

Formula No. I. was originated by the late Professor Redwood, but we have modified it somewhat with beneficial results.

(*d*) If the ink be too thick, it follows that there will be only surface-marking, and, consequently, under the wear and tear of the fabric it disappears. No. I. does not have this objection, but as it may vary with the quality of acacia, it is well to test the ink before sending it out.

To impart a crimson instead of a brown colour to the ink substitute ʒj. of carmine for the archil and chlorophyll, dissolving it in the ammonia; while a blue ink is obtained by adding 5 gr. (or more) of sulphate of copper to each ounce with a corresponding increase of ammonia solution.

To make silver marking-ink suitable for stamping add 1 dr. of glycerine and the same of treacle to each ounce.

Aniline Marking-ink (Two Bottles)

(1)

Aniline	ʒj.
Paratoluidine	gr. x.
Dilute hydrochloric acid	ʒij.
Mucilage of acacia	ʒij.

Dissolve the paratoluidine in the aniline, add the acid and the mucilage, and mix.

(2)

Chloride of copper	℈ij.
Chloride of sodium	ʒss.
Chloride of ammonium	℈j.
Chlorate of potassium	℈j.
Distilled water	ʒv.
Mucilage of acacia	ʒiij.

Boil the water and dissolve the salts in it, add the mucilage, and mix.

For writing equal parts of each solution should be mixed immediately before use. The ink is put up in cases containing a bottle of each solution and a small earthenware dish in which the ink is mixed, together with a quill nib, as a steel pen must not on any account be used. Cases containing two empty ʒij. square phials (lipped) and an earthenware dish are sold by druggists' sundriesmen. The box should be labelled as follows :—

Directions for Use.—Shake the bottles and mix two or three drops from each one in the palette contained in the box, and stir with the quill nib, when the ink is ready for writing, which should on no account be done with a steel pen. The quill or a gold pen should be used.

N.B.—Allow the writing to dry. The linen may be gently warmed on steam or hot-water pipes, or before a fire, but a hot iron should not be passed over it.

The above formula provides an excellent marking-ink, and one which can be sold at 1*s.* per case at a handsome profit. The formula was perfected by Mr. Robert Wright, of Buxton, and is the best working formula which we know of. Single-bottle aniline marking-inks are somewhat unsatisfactory, and there are few first-class ones on the market. Of all the formulas which have been proposed the following, by Dieterich, is the most reasonable :—

Aniline	℥xiij.
Potassium chlorate	ʒviss.
Distilled water	℥iv.

Heat together on a water-bath (80° to 90° C.) until the chlorate is dissolved ; then add

B.P. hydrochloric acid	℥iv.

Continue to heat until the action ceases then add

Pure copper chloride	℥j.
Distilled water	℥iij.

Previously dissolved ; and lastly add

B.P. hydrochloric acid	℥v.

Heating on a water-bath until the solution becomes of a bright reddish-violet colour. Set aside for a few days in a closed flask to settle and decant the clear portion. Add to it sufficient powdered acacia to make the ink of syrupy thickness, as it otherwise spreads in writing.

Directions.—Write with a quill pen on the smooth linen surface. Do not heat, but allow the linen to hang in the air for at least forty-eight hours before it is sent to the wash.

In our hands this ink has been satisfactory, the marking having come from the wash of a jet-black colour. The method of making the ink is, however, somewhat wasteful, there being more deposit than fluid, and it being necessary to decant the latter from the former.

Red Marking-inks

I

To a saturated solution of eosin in water add as much waterglass as will make the ink thick enough to flow freely from the pen. On writing with this ink and allowing to remain for several days the dye is mordanted to the fibre by means of the silicate. Waterglass also mordants cochineal solutions in the same way.

II

(1)

Stannous chloride	gr. xv.
Acacia mucilage	℥ss.
Distilled water to	℥iij.

Dissolve the chloride in 2 oz. of water, add the mucilage, and make up.

(2)

Chloride of gold and sodium	gr. xv.
Powdered acacia	gr. xv.
Distilled water	ʒiiss.

Dissolve.

The fabric is damped with No. 1 solution (the mordant) and dried with a polishing-iron. The writing is then done with No. 2 (the ink). The writing is reddish purple in colour.

The juice of the banana and of the marking nut (*Anacardium occidentale*) have been suggested as marking-inks, but no practical method of preparing them for sale appears to have been made known.

MISCELLANEOUS INKS

Cyclostyle-ink is a variety of printer's ink, the manufacture of which is so intricate that to describe it here would take up space needlessly, as special machinery and long experience are necessary to produce the ink satisfactorily.

Draft-ink, used by bankers and others for writing in white letters upon coloured paper, is a solution of potash or soda. It may be made extemporaneously in the following manner:—Washing-soda ℥ij., slaked lime ℥j., boiling water ℥x. Dissolve the soda in the water, add the lime, stir well, and when cold decant the clear solution.

Etching-ink

Fluoride of ammonium .	ʒij.
Sulphate of barium . .	ʒij.

Reduce to fine powder in a mortar, then transfer to a lead dish and make into a thin writing-cream with hydrofluoric acid. (Some prefer to use fuming sulphuric acid.) Use a piece of lead to stir the mixture.

The ink may be put up in bottles coated with paraffin, which can be done by heating the bottle, pouring in some melted paraffin, and letting it flow all round.

The writing is done with a quill, and in about half a minute the ink is washed off.

Inks for Writing on Glass

Blue

Bleached shellac . .	℥j.
Venice turpentine . .	℥ss.
Spirit of turpentine . .	℥iiss.

Dissolve by a gentle heat and add

Finely powdered indigo .	℥ss.

Mix.

Any other insoluble colouring matter may be used in place of the indigo—lamp-black and vermilion, for example.

Instead of a varnish basis, one of diluted waterglass may be used, with aniline colours for the tints.

Invisible and Evanescent Inks.—Chemistry furnishes us with an immense variety of substances to select from, which by means of chemical or physical change may be made to appear or disappear. The latter may be taken first because the group is the shorter one.

Evanescent Ink

I

Iodine	gr. v.
Iodide of potassium .	gr. v.
Mucilage of acacia . .	ʒij.
Water to . . .	℥ij.

Dissolve the iodide in ʒj. of water, add the iodine, and when it is dissolved add more water and the mucilage.

II

Arrowroot . . .	gr. ij.
Tincture of iodine . .	♏v.
Water	℥j.

Boil the arrowroot in the water, and when cold add the tincture.

No. I. should be used on glazed white paper, and No. II. on any kind of paper. The writing disappears in about four days. Some time ago Professor Braylants, of Louvain, devised a curious application of iodine ink, so as to make invisible writing visible. It is to lay several sheets of note-paper on each other, and write on the uppermost with a pencil, then select one of the under-sheets on which no marks of the writing are visible. On exposing this sheet to the vapour of iodine for a few minutes, it turns yellowish, and the writing appears of a violet-brown colour. The explanation is that note-paper contains starch, which under pressure becomes hydrated, and turns blue with the iodine. It is best to write on a hard substance, such as a pane of glass.

This takes us to the subject of invisible or sympathetic inks, and curiously there is an historic circumstance closely related to Braylants' observation. During the first Afghan war rice-water was used as invisible ink, and correspondence between the Government of India and Jelalabad was established by its use. The letter was concealed in a quill. On opening it a small paper was unfolded, on which appeared the single word 'iodine.' That magic liquid was applied, and thereupon appeared an important despatch from Sir Robert Sale.

Turpin, the French chemist who, a few years ago, saw the inside of a prison for his melenite revelations, kept up a secret correspondence with a friend, using invisible ink. This was discovered, and led to an official inquiry, when some strange revelations were made by some of the convicts—as, for example, the use of milk as invisible ink. Thus when information has to be conveyed to a prisoner, a formal letter, containing apparently nothing but a few trivial facts of a personal nature, is forwarded to the prison. This is read by the governor, who stamps it, and allows it to be handed to the prisoner to whom it is addressed. The latter, however, is aware that there is another letter to be read within the lines, and when he rubs his dirty finger between the visible lines the secret communication makes its appearance.

Some inks give writing which only becomes visible on heating, others require the writing to be wetted with a reagent; and it is obvious that the latter must be in the possession of the person who receives the letter.

I

Chloride of cobalt	ʒj.
Acacia mucilage	ʒj.
Distilled water	℥j.

Dissolve.

The writing becomes blue when the paper is heated, and disappears again on cooling.

II

Oxalomolybdic acid[1]	gr. xv.
Distilled water	℥j.

Dissolve.

Write with this in a dull light. The writing appears blue when exposed to the sunshine. When wetted the blue changes to black.

III

Chloride of nickel	gr. x.
Chloride of cobalt	gr. x.
Distilled water	℥j.

Dissolve.

The writing becomes green on heating.

IV

Acetate of lead	ʒss.
Distilled water	℥j.

Dissolve.

The writing is invisible, and becomes black when damped with a sulphide solution.

These will serve to show how invisible inks are made. No. IV. should be especially rich in suggestion to chemists. For instance, write with solution of tannin or potassium ferrocyanide, and brush the writing with tr. ferri perchlor. The result is excellent.

Lithographic Ink

Yellow wax	℥x.
Shellac	℥viij.
Mastic	℥v.
Tallow	℥iv.
Yellow soap	℥iv.
Venice turpentine	℥ss.

Melt together, and add gradually and with constant stirring

Lamp-black	℥iiss.

Pour into moulds to form cakes of a suitable size.

When required a little of this cake is emulsified by the addition of boiling water, rubbing it down well.

Photographic Ink

(*For writing on prints*)

Iodine	gr. x.
Iodide of potassium	℈v.
Mucilage of acacia	♏xx.
Water to	ʒvj.

Dissolve.

Write with this in a dark portion of the print. The result is that the silver on the part written is bleached by being converted into iodide.

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[1] Made by dissolving molybdic acid to saturation in a hot solution of oxalic acid and collecting the crystals on cooling.

Stamp-inks may be divided into three classes: first, those made with mineral colours and an oily basis; second, those containing aniline-colours dissolved in oil; and, third, aniline-inks made with glycerine. The last are for indiarubber stamps, the oily colours being unsuitable for these. The aniline-colours employed for the oily inks must be oil-soluble.

Oily Stamp-inks

Blue

I

Ultramarine . . .	℥v.
Olive oil . . .	℥xvj.

Reduce the ultramarine to an impalpable powder, and mix with the olive oil.

II

Paris blue . . .	℥j.
Ultramarine . . .	℥ss.
Olive oil	℥ix.

Mix the solids, and when reduced to an impalpable powder gradually add the olive oil with constant stirring.

Green

Verdigris . . .	℥vj.
Oleic acid . . .	℥j.
Olive oil . . .	℥viij.

Rub the verdigris to very fine powder, mix the oleic acid with it, and, after a few minutes, the olive oil.

Red

Vermilion . . .	℥iij.
Olive oil . . .	℥v.

Prepare as above.

Black

Gas-black . . .	℥iss.
Olive oil . . .	℥ix.

Prepare as above.

All these inks should be well shaken before pouring on the pad. Heavy petroleum oil may be used instead of olive oil.

Oily Aniline Inks

Red

Oil-soluble Bordeaux-red aniline . . .	ʒiss.
Oil-soluble scarlet aniline	ʒiss.
Crude oleic acid . .	ʒv.
Castor oil to . . .	℥xvj.

Rub the aniline-colours very fine with the oleic acid, then add the castor oil, and warm the whole gently, stirring all the time, until it reaches a temperature of 40° C., at which continue to heat until solution is effected.

The following are prepared in the same way:—

Blue

Oil-soluble aniline-blue .	ʒiij.
Crude oleic acid . .	ʒvj.
Castor oil to . . .	℥xvj.

Violet

Oil-soluble aniline-violet .	ʒiij.
Crude oleic acid . .	ʒv.
Castor oil to . . .	℥xvj.

Blue black

Oil-soluble aniline-black .	ʒv.
Crude oleic acid . .	ʒvj.
Castor oil to . . .	℥xvj.

Green

Oil-soluble aniline-blue .	ʒiiss.
Oil-soluble aniline citron-yellow . . .	ʒiss.
Crude oleic acid . .	ʒv.
Castor oil to . . .	℥xvj.

Glycerine Stamp-inks

Aniline water-blue 1B	ʒiij.
Distilled water	ʒx.
Acetic acid	ʒij.
Rectified spirit	℥iss.
Glycerine to	℥x.

Make a solution by rubbing in a mortar.

In the same way, and with the same compound menstruum, are prepared the following colours :—

Violet.—Methyl-violet 3B	ʒij.
Red.—Diamond fuchsin I	ʒij.
Green.—Aniline-green D	ʒiv.
Brown.—Vesuvin B	ʒv.
Black.—Deep black E	ʒiij.

For bright red omit the acid from the solution, replacing it by water, and using ʒiij. of eosin BB N. These formulas are after Dieterich, and are the best we have seen.

Stencil-inks

I

The Basis

Shellac	℥iv.
Borax	℥iij.
Water	℥xx.

Boil together until 20 oz. of solution is obtained.

The Colourings

A

Drop black	℥ij.
Powdered acacia	℥ij.

Mix thoroughly, and gradually incorporate the basis.

B

Venetian red	℥ij.
Powdered acacia	℥ij.

Mix with the basis as in *A*.

C

Prussian blue	℥ij.
China clay	℥j.
Powdered acacia	℥j.

Mix as above.

II. Water Black

Logwood	℥j.
Bruised galls	℥vj.
Water	Oiij.

Boil until the decoction is reduced to 3 pints, strain, and add to the liquor

Vinegar	℥ij.
Copperas	℥ij.
Alum	℥ij.
Dextrin	℥x.

Mix.

III. Varnish Black

Asphalt	lb. j.
Venice turpentine	lb. j.
Lamp-black	℥iv.
Spirit of turpentine	Oiij.

Dissolve the first two in the spirit, strain, and add the lamp-black.

Ticket-writing Inks are ordinary writing-inks thickened with gum arabic or waterglass ; the latter does not run after it dries.

Typewriter-ribbon Inks are almost the same as glycerine stamp-inks, except that equal parts of glycerine and absolute alcohol are used, as in the foregoing formulas, but without acid. An ink which is said to be equally good for ribbons and indiarubber stamps consists of 2 parts of castor oil with 1 part of creosote or carbolic acid and 1 part of oil of cinnamon, 1 part of any of the oil-soluble aniline-colours being added to the mixture. For indiarubber stamps 4 parts of castor oil are recommended, but oily inks should not be used for indiarubber stamps, and, in our experience, an oily ink is objectionable for type-ribbons also.

Inks for Metallic Surfaces

For Iron and Brass

Sulphate of copper . .	ʒij.
Vinegar	ʒss.
Lamp-black . . .	ʒss.
Acacia mucilage . .	ʒij.
Water to . . .	℥j.

Dissolve and mix.

For Zinc and Copper

Verdigris . . .	℥j.
Sal ammoniac . . .	℥j.
Lamp-black . . .	℥ss.
Acacia mucilage . .	℥ss.
Water	℥viij.

Mix thoroughly and write with a quill.

For Zinc and Tin

Chloride of potassium .	ʒiij.
Sulphate of copper . .	ʒvj.
Distilled water . .	℥ix.

Dissolve and mix with the following solution :—

Resorcin-blue M . .	gr. iij.
Acetic acid . . .	ʒj.
Distilled water . .	ʒv.

May be used with a steel pen.

For Zinc

Liq. antim. chlorid., B.P.

To Write on Silver

Use a solution of platinic chloride, expose to the fumes of ammonia, and dry with sawdust.

Gold and Silver Inks are made by triturating the powdered metal (or suitable alloys thereof) with water made sufficiently viscous with acacia mucilage or waterglass.

VARNISHES, POLISHES, AND STAINS

Varnishes may be divided into two groups—(a) those in which the solids must be specially treated before they are acted upon by solvents, and (b) those made from solids which dissolve naturally in spirit or similar liquids. The first class is the more important, for it includes most of the varnishes used by painters, coachbuilders, and other tradesmen, and which are only made by experts; while the second class includes those which most druggists generally manufacture.

The characters of the resins used in making varnishes determine the quality of the product. By far the larger proportion of natural resins are directly soluble in alcohol and ether, and most of these also dissolve in oil of turpentine and certain petroleum and coal-tar distillates; but there are a few resins which are extremely refractory towards solvents of all kinds until they have been fused by heat. It is these latter—viz., amber, animi, copal, and kauri—which make the most durable varnishes. Two at least of these are fossil resins (amber and kauri), and the best animi is also fossilised. The botanical source of Amber Resin is not accurately known. Probably no single tree yielded what is now dug up in the coasts of Northern Europe and North America. The best of it is not used for making varnishes, but for other purposes which are well known. It is the smaller pieces and turnings which are used in varnish-manufacture, and that to an extent which is only limited by the supply. The resin is practically insoluble in most liquids. When carefully heated to a temperature slightly over 600° F., amber undergoes change, and becomes soluble in hot oil of turpentine, petroleum spirit, benzine, linseed oil, ether, and chloroform, but still remains refractory towards alcohol. This change by heating is very important in the varnish-maker's art, and when the process is carried out technically it requires great care and much experience. The process is called 'gum-running.' It is performed in a copper pan (similar to a steam-pan, but sometimes flat instead of spherical), to the top of which is riveted a copper cylinder three times as high as the pan is deep. In heating this pan (or gum-pot, as it is called) it is placed upon wheels, so that in the event of the resin firing the pot may be drawn out of the factory. Generally the factory floors have a series of rails sunk in them upon which the wheels run, and at intervals in the floors are holes in which are the furnaces to heat the pots. A hood is used to cover the pot, as much inflammable vapour is given off during the 'running,' and it is necessary to carry it away. The pots are made to 'run' from 7 to 50 lbs. of resin at a time, the capacity of the pot being about twenty times greater than the amount of resin to be 'run' in it. The process consists in putting the resin in small pieces into the pot, and stirring while it melts. Then it begins to boil and froth, owing to the escape of some volatile constituents. While this frothing goes on the pot has to be watched with the greatest care, and if there is the slightest prospect of it running over, the pot is drawn off the fire, and the froth beaten until it subsides. The pot is now returned, and the heat carefully continued until frothing ceases altogether, at which point the resin is ready to mix with the other ingredients of the varnish in the manner to be described.

While the resin is undergoing the 'running' process the oily solvent for it is prepared. This solvent is linseed oil, which is boiled in a pot similar to that already described. When linseed oil is heated it begins to boil at 266° F.; the temperature soon rises to 482° F., and keeps between that and 554° F., losing one-twelfth of its weight. For varnish-making the oil should not be allowed to rise much above 500° F. It becomes viscous, but does not solidify unless the temperature is allowed to go beyond 600° F. When the resin reaches the proper point, the quantity of linseed oil prescribed for it is poured into the gum-pot, and the oil and resin thoroughly mixed by stirring. This mixture has also to undergo the 'running' process, a capacious iron kettle, called the 'set-pot,' being used for the purpose. The 'run' has to be made with the same precautions as before, and the heat continued until the mixture becomes stringy. This takes from one to five hours at a temperature of 500° F., according to the resin used. When this is done, the set-pot is removed from the fire and placed remote from it, as the stringy mixture has to be thinned with oil of turpentine, after it cools a bit, but before it sets. This mixing must be done very carefully in order to prevent accidents. When it is finished the varnish is stored for at least six months, to allow it to mature. The best varnishes are not sent out less than two years after they are made.

When ethereal solvents are to be used in making varnishes from such resins, only the first 'running' is made, and when the 'running' is complete the resin is poured out upon a cold stone surface, the mass allowed to cool, and the resin afterwards ground. The powdered material is then treated with the solvent by cold maceration. The so-called insoluble resins become soluble without loss when heated under pressure. See *The Chemist and Druggist*, lix. p. 770.

Amber, from its comparatively high price and inadequate supply, is of less importance to the varnish-maker than animi, or African copal. This is a fossil resin, and may conveniently be mentioned along with other copals which come into the market. The following table gives the commercial names of the various resins, their botanical sources (where known) and melting-points. The last-mentioned figures determine the quality of the resins for varnish-making, as the higher the melting-point the better the resin. The figures are those of M. Bottler. On page 390 is another table which shows the solubility of various resins in several common oily solvents.

Table Showing the Chief Properties of Varnish-resins

Commercial Name	Botanical Source	Melting-point		Specific Gravity
		deg. C.	deg. F.	
Zanzibar copal (or animi)	Trachylobium Hornemannium	275	527	1·0621
Red Angola copal	Copaifera?	315	599	1·068
White Angola copal	Copaifera?	245	473	1·035
Pebbly copal	Copaifera?	230	446	1·067
Sierra Leone copal	Copaifera Guibourtiana	195	383	1·064
Congo copal		190	374	1·048
White Benguela copal	Copaifera?	185	365	1·0593
Yellow Benguela copal	Copaifera?	180	356	1·065
Kauri gum	Dammara australis	150	302	1·0456
Yellow Manila copal [Indian copal, white dammar]	Vateria indica	145	293	1·069
American copal	Hymenæa Courbaril	90-95	194-203	1·068-1·070

It should be understood that semi-fossilised copals are not fusible in the ordinary sense of the word, for they require to be kept at these high temperatures for a considerable time before they become liquefied by the heavy oily products of their own decomposition. When once melted, copal and its congeners are completely changed. They dissolve readily, as has been said, and mix easily with linseed oil, but they are much less hard than in their original condition, and are darker in colour. It follows from this statement that the above melting-points will vary with the conditions of fusion: if heated in a closed vessel, the quicker will the resins melt. Zanzibar copal has been found which melts as high as 370° C. (698° F.).

There is considerable doubt as to the botanical origins of copal resins, but the balance of belief in regard to the African mainland copals is that they are derived from species of *Copaifera*. Of the American copals, the Brazilian or South American is best known, and is obtained from *Hymenæa Courbaril*. There are two sorts of it—the one with the higher melting-point being dug out of the earth, and the other being recently collected from the trees. The same tree is supposed to yield West Indian copal, but that resin is really derived from

Amyris copallifera. A copal is also obtained in the United States from *Rhus Copallina* and *Rhus leucantha.* These do not come into British commerce.

Besides the method of fusion, a process for rendering varnish-gums soluble has within the past decade been carried into practice, although not extensively, which greatly reduces the danger attendant on the manufacture of varnishes. This is to heat the powdered resins in warm air well below the temperature at which the resins melt. Prolonged and strong heating of the resins darkens them very much indeed, and therefore diminishes their value for varnish-purposes. Other modifications of the old process are to pass a current of resin-solvent vapour, such as oil of turpentine, over the powdered resin, and heat the resin and solvent together to a temperature of 212° F.; while another process is to heat the resin and solvent in an autoclave to 300° F.; but these methods are quite as difficult and risky as the old process.

Brief directions are given under the following formulas for preparing amber, copal, and similar varnishes as they are to be made according to the method already described—*i.e.*, the resin 'run,' mixed with the oil in the set-pot, and finally diluted with the turpentine.

Amber Varnish

Pale amber . . .	6 lbs.
Linseed oil . . .	2 gals.
Oil of turpentine . .	$3\frac{1}{2}$ gals.

Black Japan Varnish

I

Asphalt	50 lbs.
Animi	8 lbs.
Linseed oil . . .	12 gals.

Run each of the 'gums' separately, and add the boiled oil to them, 10 gals. to the first, and 2 gals. to the second, and pour into the set-pot. Then run and mix

Amber	10 lbs.
Linseed oil . . .	2 gals.

Add to the set-pot and boil three hours, then add

Red-lead . . .	7 lbs.
Litharge	7 lbs.
Copperas . . .	3 lbs.

Boil until it sets on cooling, and then mix with it

Oil of turpentine . .	30 gals.

II

Asphalt	10 lbs.

Run, and add a third of

Linseed oil . . .	6 gals.

Previously heated in the set-pot for two hours. When mixed add the other two-thirds to the set-pot, and stir well; then add

Red-lead . . .	2 lbs.
Litharge . . .	2 lbs.
Copperas . . .	1 lb.

Boil four hours, allow to stand a

day, and heat till a little of it becomes glassy on cooling. To this add

Oil of turpentine	10 gals. or a sufficiency

Black Enamel for Cycles

Asphalt	2 lbs.
Boiled linseed oil	1 pint
Oil of turpentine	4 pints

Mix the two oils, add the asphalt in small pieces, set aside in a warm place for a week, shaking occasionally, then decant the clear fluid.

Benzine may be used in place of turps.

Carriage-varnish.

Best copal	32 lbs.
Linseed oil	10 gals.
Litharge	1 lb.
Copperas	1 lb.
Oil of turpentine	22 gals.

Run, boil, and mix in the usual manner and add (hot) to the following:—

Animi	32 lbs.
Linseed oil	8 gals.
Oil of turpentine	14 gals.

Run, boil, and mix before adding the copal mixture.

Brunswick Black

Asphalt	45 lbs.
Linseed oil	6 gals.
Litharge	6 lbs.
Oil of turpentine	25 gals.

Run the asphalt, boil the linseed oil with the litharge, mix the two, boil until hard on cooling, and add the turpentine.

Superior qualities of black enamels are now made with Chinese wood oil instead of linseed oil. Chinese wood oil has been long employed secretly in varnish manufacture. It is paler than linseed oil, dries quicker, and the coating is harder.

NOTE.—Enamelling of cycles and similar articles is done by a special process which it is impossible to imitate by brushing. Generally three coats of the enamel are applied. After the first one the article is 'fired,' then rubbed smooth with emery; a second coat applied, and again 'fired' and rubbed; and so with a third coating—the final polish being, in some cases, done with the bare hands.

Copal Varnish

I

Copal	8 lbs.
Linseed oil	2 gals.
Oil of turpentine	5½ gals.

Run, boil, and mix in the usual way.

II

Copal	℥xxiv.
Sugar of lead	℥iv.
Camphor	℥ij.
Resin	℥ij.
Oil of turpentine	Oiv. ℥xvj.
Linseed oil	Oiij. ℥iv.

Prepare as above.

Gold-size

Copal	8 lbs.
Linseed oil	8 gals.
Oil of turpentine	12 gals. or a sufficiency

Run, boil, and mix.

Mahogany-varnish

Animi	8 lbs.
Linseed oil	3 gals.
Litharge	4 oz.
Sugar of lead	4 oz.
Oil of turpentine	5 gals.

Run, boil, and mix.

Oak-varnish

I

Kauri gum	8 lbs.
Linseed oil	3 gals.
Oil of turpentine	5½ gals.

Run, boil, and mix.

Made also with copal, and ¼ lb. each of litharge, sugar of lead, and copperas to the above proportions of resin and oils.

II

Yellow resin	7 lbs.
Canada balsam	2 pints
Oil of turpentine	2 gals.

Disolve the resin in the turpentine, strain and add the Canada balsam.

It will be seen that there is a general resemblance to each other amongst these formulas, and probably there is little variation from them in practice on the large scale, superiority and inferiority of particular brands depending upon the selection of the resinous constituents, boiling of the oil, use of driers, and maturing. Several plans are used in France instead of running. Thus, in the case of dammar, 12 oz. of the powdered resin is taken and made into a thick mixture with 10 oz. of oil of turpentine. The mixture is carefully heated until it commences to boil, when it is taken from the stove, and, with constant stirring, 5 to 10 oz. of oil of turpentine is added, the mixture again heated to boiling, allowed to cool, and strained.

The cold process is as follows:—Reduce the copal or other resin to powder, and then add gradually essential oil of spike, stirring well all the time, and occasionally until the mixture is homogeneous. If at this point turpentine is added, the copal is precipitated, which is not the case if solution is promoted by heat; therefore the mixture should be carefully heated on a water-bath for an hour, placing a funnel in the flask and a flask full of cold water in the funnel to condense the vapours. A little turpentine oil may be added occasionally to keep the copal mixture thin. For the reasons already stated such methods as these do not produce durable varnishes; but it is well to know how these short processes are conducted. The essential oils have a wonderful influence in breaking down refractory resins, and have been freely employed by the French for many years. Oil of spike lavender is especially useful in this respect. The following factors by Bornemann show the solvent power of various oils upon resins commonly used in varnish-making :—

100 parts by weight of	Dissolve subjoined parts by weight of					
	Amber	C'loph'y	Copal	Damm'r	Mastic	Shellac
Cajuput oil	6·53	43·70	5·52	42·49	41·16	0·66
Copaiba oil	—	24·95	0·00	34·57	—	—
Camphor oil s.g. 0·910 .	9·73	46·16	9·16	34·95	35·04	1·33
Camphor oil s.g. 0·970 .	6·50	31·35	2·81	50·08	37·93	0·83
Lavender oil	—	52·86	—	33·07	—	—
Clove oil	—	79·79	0·00	18·27	—	—
Rosemary oil	10·16	48·94	4·81	99·44	21·39	0·79
Spike-lavender oil . .	8·90	40·98	9·51	41·66	33·47	3·67
Turpentine oil	7·47	51·84	—	64·28	52·79	12·94
Turpentine oil rect. . .	10·30	—	6·47	—	—	—

The solvent power of light camphor oil has brought it into rivalry with oil of turpentine, but the cheapness of the latter, and the rather slow evaporation of the former, have prevented the general adoption of the camphor oil.

Spirit-varnishes.—Methylated spirit, acetone, amyl acetate, wood naphtha, ether, benzol, and carbon bisulphide are used as solvents for those resins which do not require to be fused in order to make them soluble. Amyl acetate is chiefly used for making celluloid or pyroxylin varnishes used in preparing Gold Paint; it is not suitable for making varnishes which are used for an extensive surface, because the vapour given off is physiologically very active, producing coughing and exciting the circulation. It is a good resin-solvent ; so is amylic alcohol itself, which is also used. Acetone is not inferior in that respect, and has the great advantage over benzol of miscibility with alcohol. It is also cheap. Coal-tar benzol, or benzene, is rather heavy for varnish-purposes, better solvents being petroleum benzine (*i.e.*, petroleum ether or spirit), sp. gr. 0·725 to 0·745, which is largely used ; also shale naphtha, sp. gr. 0·725 and under, which is much used in the indiarubber industry as a solvent. It is sometimes called gasolene—indeed, the names given to the lighter hydrocarbons are quite confusing; but whatever a solvent may be named, it suffices for the varnish-maker to know that when hydrocarbons fall under sp. gr. 0·700 they diminish in resin-dissolving power, and above sp. gr. 0·725 their volatility becomes slower. Carbon bisulphide is an excellent resin-solvent, but its bad odour practically excludes it from use.

The more common spirit-varnish resins are the various lacs, sandarac, elemi, benzoin, colophony, mastic, gamboge, dragon's-blood, and gum acroides, the last three as colouring agents. Besides these, other resins and terebinthinous products are used. By far the most important of the group are the lacs, produced in India and other Asiatic countries through the puncture of an insect (the female *Coccus lacca*) on the branches of various trees, including several species of *Ficus*, *Butea frondosa*, *Schleichera trijuga*, &c. The crude lac is known as sticklac, and occasionally comes into the market. It contains the formerly well-known lac-dye and the varnish-resin. To prepare the latter, the lac is coarsely ground and repeatedly treated with water, which dissolves the colouring-matter, and the residue, after drying, forms seed lac. From this shellac, garnet lac, and button lac are prepared by the simple process of heating and straining—the liquid resin, in the case of shellac, being spread on plantain-leaves, cooled, and removed. The other kinds are the same thing poured on plates. Shellac is the purest variety, and contains 90 per cent. or more of spirit-soluble resin and 4 per cent. of wax, with colouring-matter, &c. The other varieties contain a larger proportion of non-resinous matters. It is to the wax of shellac that the cloudy appearance of its alcoholic solutions is due. Varnishes containing shellac may be filtered without impairing their properties, but not so polishes, as the wax is of material advantage in polishing. Sandarac, or gum juniper, is a coniferous resin exuded by the North African tree *Callitris quadrivalvis*. It dissolves to the extent of 90 per cent. (sometimes more) in methylated spirit, and is an excellent adjunct to shellac, giving lustre. Elemi generally comes into the market in the soft oleo-resinous state. There are several kinds of it, but the Manila variety (from *Canarium commune*) is most esteemed. It is used chiefly for white varnishes, giving them a pleasant odour, and imparting toughness to the varnish film. Mastic makes an exceedingly durable varnish, but when used alone it cracks ; the latter characteristic is particularly marked in colophony varnishes. Here it may be noted that colophony is referred to in the formulas as 'resin.' Benzoin is used solely for imparting odour, but from its constitution it is probable that it helps to bring about those chemical changes which give permanence to the varnish film.

In making spirit-varnishes the solids, preferably in coarse powder and mixed with their own weight of coarsely-ground glass, are shaken with the spirit occasionally until dissolved. On the large scale the resins and solvent are continuously churned with a mechanical agitator. There is no reason why a batch of varnish should not be made in the course of a day, but drug-trade custom gives a week to the varnish-jar as well as to the tincture-maceration bottle. Obviously, however, the way to get the resin into solution, and prevent it getting into an agglutinated lump, is to give it a vigorous shake or stir now and then.

By 'spirit' in the formulas, methylated spirit 64° o.p. is meant, but permission for the use of this in varnish-making in the United Kingdom must be obtained from the Board of Inland Revenue. Rectified spirit of similar strength may be used, if the price of it is not prohibitive.

Basket-varnish

Shellac	℥viij.
Resin	℥j.
Benzoin	℥ss.
Bismarck brown . .	ʒij.
Spirit	℥xxx.
Wood naphtha . .	℥x.

Dissolve and strain.

Bookbinders' Varnish

Resin	3 lbs.
Seedlac	12 oz.
Spirit	2 gals.

Dissolve, add kaolin 4 oz., shake, and strain.

Bottle-cap Varnish

I

Shellac	℥x.
Guttapercha . . .	℥j.
Venice turpentine . .	℥j.

Melt together, mixing well, and pour on a stone slab. When cold powder and macerate in

Spirit	Oiij.

Dissolve and strain through cotton-wool.

II

Dissolve 2 oz. of odd bits of red scaling-wax in 5 oz. of spirit.

Black Varnish

I

Black sealing-wax	℥v.
Spirit	℥xij.

Dissolve.

Upon this principle varnishes may be made from other colours of sealing-wax.

II

Shellac	℥xij.
Resin	℥viij.
Lamp-black	℥iss.
Spirit	Oiij.

Dissolve the resins in the spirit, strain, and add the lamp-black.

Celluloid Varnish

I

Celluloid parings	℥j.
Amyl acetate	℥xx.

Dissolve.

More or less amyl acetate may be used according to the purpose for which the varnish is required.

II

Pyroxylin	℥j.
Ether	℥vj.
Spirit	℥viij.

Dissolve and add

Camphor	ʒiiss.

Dissolve.

The first is the better varnish, especially for making gold paint.

Caoutchouc Varnish

Caoutchouc	℥xij.
Oil of caoutchouc	℥xxv.
Benzol	℥xxv.
Oil of turpentine	℥xviij.
Resin	℥v.
Mastic	℥v.
Asphalt	℥x.
Chloroform	℥v.

Cut the caoutchouc into small pieces and digest in a still with reflux condenser for twenty-four hours; then add the benzol and turpentine, continuing to heat until solution is effected. Melt the resin, mastic, and asphalt together, mixing well, and add to the contents of the still. Dissolve, and add the chloroform when cold.

Crystal Varnish for Maps, &c.

The best crystal varnish is made with Canada balsam and sufficient turpentine to bring the varnish to a proper consistence for the purpose for which it is required. Another good varnish is

Mastic	2½ lbs.
Dammar	1 lb.
Oil of turpentine	1 gal.

Dissolve.

If the resins be melted together, cooled, and powdered before treatment with the turpentine a better solution is obtained. *See also* Label Varnishes.

Ebony Varnish

Shellac	3 lbs.
Spirit	2 gals.

Dissolve, strain, and add gradually to 4 oz. brilliant spirit-black. Mix well.

Ethereal Amber Varnish

Amber	℥xv.
Resin	℥x.

Melt together and mix. When cold break up and dissolve in

Spirit	℥xxx.
Ether	℥xxvj.

Filter through cotton-wool.

Furniture-varnish

A shellac-and-resin varnish, such as No. 1. spirit-varnish.

Knotting-varnish

Shellac	1 lb.
Sandarac	3 oz.
Spirit	3 pints

Dissolve and strain.

Label-varnishes

I

Canada balsam	℥v.
Oil of turpentine	℥v.

Mix.

II

White shellac	℥j.
Carbonate of lead	℥ss.
Ether	℥viij.

Dissolve the shellac in the ether, add the carbonate of lead, shake, and filter clear.

III

Sandarac	℥v.
Mastic	℥ij.
Camphor	ʒj.
Oil of lavender	℥j.
Venice turpentine	ʒij.
Ether	℥ij.
Spirit	℥xij.

Dissolve by a week's maceration.

Labels should be sized and allowed to dry before varnishing.

Varnish for Gold Labels

Sandarac	℥iij.
Mastic	℥j.
Canada balsam	℥j.
Spirit	℥xvij.

Dissolve and strain.

See also Paper-varnish.

Leather-varnish

Sandarac	℥j.
Mastic	℥j.
Garnet lac	℥iv.
Resin	℥ij.
Venice turpentine	℥j.
Spirit	℥xxviij.

Dissolve, strain through cotton-wool, and mix gradually with 1 oz. of fine lamp-black or 2 oz. of alcoholic solution of nigrosin.

Mahogany-varnish

I

To each gallon of shellac spirit-varnish add ½ oz. Bismarck brown B and a trace of aniline-black, or use 1 oz. of dragon's-blood with each pound of shellac.

II

Dragon's-blood	℥vj.
Red wood-stain	℥vj.
Spirit-varnish	Oij.

Macerate four days and filter.

Mastic Varnish

Mastic	℥vj.
Oil of turpentine	℥xv.

Dissolve.

To make good mastic varnish care is required in every part of the process—in picking the gum, in dissolving it, and, above all, in filtering the varnish. The longer mastic varnish is kept the better, as it becomes tougher and less apt to chill or bloom. It matures in from six to twelve months.

Paper-varnish

African copal	℥iv.
Powdered glass	℥iv.
Camphor	℥j.
Ether	℥xx.

Macerate for a month, then add

Absolute alcohol	℥v.

Again macerate for two weeks, and decant the clear varnish.

Parisian Varnish

White

Dammar	℥iij.
Sandarac	℥vj.
Mastic	℥ij.
Venice turpentine	℥j.
Camphor	ʒij.
Oil of lavender	℥j.
Spirit	℥xxvj.

Powder the first three resins, and digest in the spirit at a temperature of 100° F. for three days, shaking frequently, then heat on a water-bath until most of the resins is dissolved, add the other ingredients, and strain through cotton-wool. The product should measure 36 oz.

Red

To the foregoing add

Dragon's-blood	℥j.
Saffron	ʒj.
Spirit	℥ij.

Photographic Varnishes

Matt-varnish

	I	II
Sandarac	℥j.	ʒiss.
Mastic	ʒiss.	℈j.
Ether	℥x.	ʒv.

Dissolve and add

Benzine	℥iv.	℥j.

Mix.

Negative-varnish

I

Sandarac	℥ij.
Venice turpentine	℥ss.
Oil of turpentine	℥j.
Spirit	℥xx.

Shake occasionally until the resin dissolves, then filter.

II

Sandarac	℥ss.
Acetone	℥iiss.
Absolute alcohol	℥iss.
Benzine	ʒx.

Macerate for a week and filter.

III

White hard varnish	℥xx.
Spirit	℥xx.
Castor oil	ʒss.
Oil of lavender	ʒss.

Mix.

Varnish for Prints

Dammar	℥j.
Benzine	℥vj.

Macerate for a week, filter, and add the following, simultaneously prepared and filtered :—

Amber	℥ss.
Chloroform	℥iv.

Mix.

Retouching Varnish or Medium

Resin	℥iss.
Dammar	ʒij.
Oil of turpentine	℥viij.

Dissolve and filter.

Redistilled oil of turpentine only should be used.

Black Varnish for Stopping-out

Asphalt	℥iij.
Guttapercha	℈j.
Lamp-black	℥ss.
Benzine	℥x.

Dissolve the first two in the benzine, strain, and add the lamp-black.

Picture-varnish

Mastic	℥xij.
Venice turpentine	℥iiss.
Camphor	℥ss.
Oil of turpentine	Oij.

Dissolve and strain.

Satinwood-varnish

Provence rose (B. S. & S.)	ʒij.
Spirit-varnish	Cong. j.

Dissolve.

Spindle-varnish

Sandarac	℥iv.
Resin	℥iij.
Spirit	℥xx.

Dissolve and strain.

Spirit-varnishes

I

Shellac	℥xvij.
Sandarac	℥ij.
Yellow resin	℥iiss.
Spirit	Oiv.

Dissolve and strain.

II

Shellac	℥xvj.
Sandarac	℥j.
Gum thus	ʒvj.
Spirit	Oij. ℥xiv.

Dissolve and strain.

III. Dark

Shellac	℥iv.
Black pitch	℥j.
Spirit	℥xvj.

To make one pint.

IV. Red

Shellac	℥xvj.
Sandarac	℥x.
Elemi	℥iv.
Dragon's-blood	℥iv.
Spirit	Cong. j.

Macerate for a week and strain.

V. White

Mastic	℥xviij.
Sandarac	lb. ivss.
Resin	lb. iss.
Spirit	Cong. ij.

Dissolve and strain.

Slake-varnish

Sumatra benzoin	℥vss.
Sandarac	℥ij.
Spirit	℥xx.

Dissolve, decant and filter.

Sandarac is sometimes omitted.

Straw-hat Varnishes

Shellac and resin spirit-varnish coloured with aniline-dyes of the desired colour.

Transfer-varnish

Mastic	℥iiss.
Sandarac	℥ss.
Canada balsam	℥ss.
Spirit	℥v.

Dissolve.

Turpentine Varnish

Resin	4 lbs.
Oil of turpentine	1 gal.

Dissolve and strain.

Varnish for Damp Walls

Melt together 30 oz. of common resin, 2 oz. of slaked lime, and 1 oz. of powdered turmeric. Pour out on a cold slab, and when cold grind it and dissolve in a mixture of pinolin (resin spirit) 12½ oz., cod-liver oil 5 oz., oil of turpentine 7 oz., and 5 oz. of caoutchouc solution. Decant, and to the clear solution add 10 oz. of 4-per-cent. soda solution (s.g. 1·056); mix well, and strain through a wire sieve.

Violin-varnish

Sandarac	℥iss.
Shellac	ʒvj.
Mastic	ʒvj.
Elemi	ʒiij.
Spirit	℥xx.

Dissolve by shaking, then warm and add

Venice turpentine	ʒvj.

Dissolve, allow to stand until clear, and decant the clear portion.

NOTE.—The tone of violins greatly depends upon the varnish used, but the composition of the varnishes has remained a secret of the makers. Cremona violins are supposed to have been treated with a varnish containing Chinese wood oil. The above formula is a good one for common violins.

Walnut-varnish

I

Shellac	1½ lb.
Bismarck brown B	1 oz.
Nigrosin	½ oz.
Spirit	1 gal.

Dissolve.

II

Aniline-green	ʒij.
Provence rose	ʒj.
Nigrosin	ʒij.
Scarlet	ʒiij.
Spirit-varnish	Oij.

Dissolve.

Polishes.—These are thin varnishes, and are invariably made with spirit. Some of them, as in the case of brush-polish, are very lightly rubbed, and are not used along with oil and spirit, which is essential in French-polishing. Although it requires much experience to master the latter art, an amateur can easily acquire enough skill to make a great improvement in old and worn pieces of furniture. The requisites are polish, linseed oil, methylated spirit, a piece of rag, and a rubber made by winding list or a strip of old flannel into a roll, three or four inches in diameter and an inch or two long; this is tied round with string and put in the middle of a cloth, the ends of the latter being gathered up and tied to form a convenient handle. The furniture is carefully washed with soap and water and thoroughly dried; any very bad scratches may be smoothed a little with fine glass-paper. All dust and moisture having been removed, the mouth of the bottle of French polish is placed against the middle of the rubber and well shaken to saturate it for some depth. The rag is moistened with the linseed oil and just touched against the middle of the rubber, and polishing is then begun. It is best to try a flat surface first. Begin with a circular motion (always in the same direction), keeping to one part a few inches square till the surface is satisfactory. If the rubber sticks, just touch it with spirit and the oily rag. When one part is finished begin on the next.

Brush-polishes

I

Shellac	℥viij.
Benzoin	℥iij.
Resin	℥iij.
Spirit	Oij.

Dissolve.

II

Shellac	℥xviij.
Sandarac	℥ij.
Mastic	℥iss.
Spirit	Oiij.

Dissolve.

III

Shellac	℥xiv.
Resin	℥ij.
French polish	Ov.

Dissolve and strain.

French Polishes

I

Shellac	℥xvj.
Benzoin	℥ss.
Sandarac	℥j.
Spirit	Oiv.

Dissolve and strain.

II

Shellac	℥xx.
Mastic	℥iij.
Sandarac	℥vj.
Elemi	℥ss.
Spirit	Cong. j.

Dissolve and strain.

Stands the addition of another ½ gal. of spirit.

III

Shellac	℥xij.
Gum thus	℥ij.
Sandarac	ʒiij.
Oxalic acid	ʒiij.
Spirit	Oiv.

Dissolve and strain.

Colourless French Polish

White shellac	℥iv.
Sandarac	℥j.
Sand	℥iv.
Spirit	Oj.

Powder the resins, mix with the sand, and dissolve in the spirit. Decant the clear portion, and filter the remainder.

Floor-polish for Ball-rooms

Hard paraffin	1 lb.
Powdered boric acid	7 lbs.
Oil of lavender	1 dr.
Oil of neroli	20 min.

Melt the paraffin and add the powdered boric acid and the perfume, mix well, and sift through a $\frac{1}{16}$-inch mesh sieve.

LACQUERS.

Lacquers are made from a variety of formulas, but the following small selection will give some idea of what is required, and the different shades can easily be regulated by increasing or diminishing the proportions of the colouring-agents used. Lacquers should be made by agitation without heat, and after the resins are dissolved the preparation should be allowed to stand until clear, then strained. The lacquer used by brass-finishers is a solution of 3 lbs. of seedlac in a gallon of methylated spirit. This is applied to the heated brass, and the metal is again heated to a high degree, whereby the lacquer is made practically indestructible to atmospheric agencies, and is not readily attacked by resin-solvents. Sometimes a little gamboge is added, as well as other colouring-agents, according to the tone which it is desired to impart to the surface. During the past twenty years spirit-soluble aniline-colours have been much employed in lacquer-making, especially for tin-box lacquers; but these preparations are really varnishes, true lacquers requiring the heating process. Lacquers should be thinner than varnishes, as a thick coating is undesirable. When a variety of tints is required, the best plan is to make the resin-and-spirit basis or lacquer (3 oz. of resins to the pint of spirit) and add to it a sufficiency of the spirituous solutions of the colours—either aniline or vegetable.

Brass Lacquers

I

Shellac	℥iij.
Turmeric	℥j.
Annatto	ʒij.
Saffron	ʒij.
Spirit	℥xvj.

Make a tincture of the drugs, filter, and in the filtrate dissolve the shellac. Again filter or strain.

II

Cape aloes	3 oz.
Sandarac	4 oz.
Shellac	8 oz.
Gamboge	8 oz.
Spirit	1 gal.

Macerate for four days, and filter.

III

Rose's brass lacquer for opticians is said to be made as follows:—Dissolve by agitation without heat 4 oz. shellac and ¼ oz. gamboge in 24 oz. pyroacetic ether. Allow to settle, and decant. When required for use mix with eight times its volume of methylated spirit.

Bronze Lacquer

The following makes the colouring-solution to be added to plain lacquer in sufficient quantity:—

Diamond fuchsine	℥j.
Hofmann's violet	℥ss.
Spirit	℥xij.

Dissolve by the heat of a water-bath, add

Sumatra benzoin	℥iss.

Boil for fifteen minutes or so until the solution becomes a bronze-green colour, strain through cotton-wool, and wash the strainer with spirit to make 12 oz.

Gold Lacquers

I

Powdered sandarac	℥j.
Powdered elemi	℥j.
Powdered seedlac	℥j.
Powdered gamboge	ʒij.
Powdered dragon's-blood	ʒij.
Powdered glass	℥ij.

Dissolve in the subjoined solution, prepared by macerating for twenty-four hours:—

Turmeric powder	℥vj.
Safflower	ʒss.
Spirit	℥xxx.

Strain.

II

Powdered turmeric	℥viij.
Gamboge	℥ij.
Shellac	℥viij.
Sandarac	℥xvj.
Spirit	Cong. j.

Macerate four days, and strain.

III

Seedlac	ʒiiss.
Cutch	ʒj.
Dragon's-blood	℥ss.
Spirit	℥xx.

Dissolve by the heat of a water-bath, and strain.

IV. Terebinthinous

Seedlac	℥ij.
Sandarac	℥iss.
Dragon's-blood	ʒij.
Gamboge	ʒj.
Venice turpentine	℥ij.
Oil of turpentine	℥xx.

Dissolve on the water-bath, and strain.

Plain Lacquer

Mastic	℥j.
Sandarac	℥j.
Elemi	℥ss.
Animi	℥ss.
Spirit	℥xx.

Dissolve and strain.

Red Lacquer

Dragon's-blood	℥viij.
Sandarac	℥xvj.
Shellac	℥viij.
Annatto	℥xvj.
Spirit	Cong. j.

Macerate for a week, and strain.

Universal Lacquer

For wood, metal, paper, glass, &c.

Bleached shellac	℥vj.
Copal	℥vj.
Mastic	℥vj.
Powdered glass	℥xij.
Spirit	Ovj.

Macerate for fourteen days, add 1 dr. of boric acid, and filter.

Boric acid seems to give lustre to lacquers, but is really not an essential ingredient.

WOOD-STAINS.

By chemical treatment, before varnishing and polishing, the natural colours of various woods are changed into much more permanent colours than the dyes applied in aqueous or alcoholic solution. Thus, the fumes of ammonia impart to oak the bronze-olive colour now so popular ; maple takes a greenish-grey stain with a weak solution of sulphate of iron, and ash an olive-green, while oak takes a bluish-green. The iron-solution should be acidified with sulphuric acid. An aqueous solution of picric acid gives most white woods a yellow colour. Subjoined are formulas for the more important water and spirit stains :—

Cedar

Catechu	ʒij.
Caustic potash	ʒj.
Water	℥xx.

Dissolve.

Boil the wood in the solution, or apply it hot.

Black or Ebony

I

Brush the wood first with a solution of sulphate of iron, and then with a decoction of logwood or galls.

II

Solution of silver nitrate (gr. x. to ℥j.). Brush with this and expose to the sun or to sulphuretted hydrogen.

Cherrywood

Rad. anchusæ	gr. xv.
Aloes	ʒss.
Sang. draconis	ʒss.
Spirit.	℥xvj.

Mix, and allow to stand for some days before using.

The wood is first to be painted with dilute nitric acid 1 in 10).

Mahogany

I

Madder	2 lbs.
Logwood, ground	1 lb.
Soft water	1 gal.

Boil one hour, filter, and use while warm. The wood also should be warm. The stain may be darkened by application, after drying, of potash-carbonate solution (1 dr. to 1 pint).

II

Dragon's-blood	℥iv.
Caustic soda	℥ij.
Water	℥x.

Boil and make up to 40 oz. with water.

III

Alkanet	℥j.
Cape aloes	℥ij.
Dragon's-blood	℥ij.
Spirit	℥xxvj.

Macerate for a week, and strain.

IV

Dissolve ½ oz. of Bismarck brown in a pint of spirit.

Oak

I

Vandyke brown	℥iiss.
Carbonate of ammonia	℥j.
Bichromate of potash	℥ss.
Washing-soda	℥ss.
Water	Oij.

Boil for ten minutes, and strain.

II

Bismarck brown	℥ss.
Vandyke brown	℥j.
Nigrosin	℥j.
Spirit	Oij.

Dissolve.

Yellow

Gamboge	℥iss.
Spirit	Oj.

Dissolve and strain.

Rosewood

I

Red sanderswood	2 lbs.
Carbonate of potash	2 oz.
Water	4 pints

Macerate eight days, and filter.

To be applied hot. Alum solution (1 oz. to 1 pint) applied while the wood is wet brightens the colour.

II

Provence rose	ʒj.
Vandyke brown	℥j.
Spirit	Oj.

Dissolve.

Walnut

I

Permanganate of potash	3 oz.
Sulphate of manganese	3 oz.
Hot water	1 gal.

Dissolve.

The sulphate is really unnecessary.

II

Nigrosin	℥ss.
Vandyke brown	℥ss.
Bismarck brown	℥ss.
Spirit	Oij.

Dissolve.

Dry Stains

Ebony. – Extract of logwood, 15 parts; water, 33 parts. Boil and add 1 part of ferric chloride. Evaporate to dryness, and powder.

Mahogany.—Extract of Brazil wood, 18 parts; caustic potash, 1½ part; water, 18 parts. Boil and add eosine 1 part. Evaporate to dryness.

Oak.—Cassel brown, 10 parts; caustic potash, 1 part; water, 20 parts. Boil, strain, and evaporate to dryness.

Walnut.—To the oak stain add 4 parts of extract of logwood before evaporating to dryness.

The spirit-stains for which formulas are given are much too strong to use alone, and are intended to be added to spirit-varnishes. If copal varnish is to be used, the stain should be diluted with spirit, then applied to the wood, and allowed to dry before varnishing.

Blackboard-paint

I

Shellac	℥iv.
Lamp-black	℥ij.
Emery-powder	℥j.
Ultramarine	℥j.
Spirit	Oij.

Dissolve the shellac in the spirit; place the lamp-black, emery, and ultramarine on a cheese-cloth strainer, pour on part of the shellac solution, stirring constantly, and gradually adding the rest of the solution until all of the powders have passed through the strainer.

II

Prussian blue	equal parts
Chrome green	
Gold-size	equal parts
Spirit	

Mix the powders, and add sufficient of the liquids to make into a cream. Use a large stiff brush, and cover quickly. In an hour give it a second coat. In a day or two smooth the surface with a hair cloth.

Browning for Gun-barrels

I

Sweet spirit of nitre	℥j.
Black sulphur	℥j.
Tincture of perchloride of iron	℥ij.
Corrosive sublimate	℥ss.
Sulphate of copper	℥iss.
Nitric acid	℥j.
Hydrochloric acid	℥j.
Water	Oij.

Dissolve and mix.

II

Strong nitric acid	℥ss.
Sweet spirit of nitre	℥ss.
Methylated spirit	℥j.
Sulphate of copper	℥ij.
Tincture of perchloride of iron	℥j.
Water to	℥xxx.

Mix, and apply with a piece of old rag, having first thoroughly cleaned the metal from all dirt, grease, &c. Allow to stand for fifteen or twenty hours, and then burnish with a hard brush. The metal should afterwards be lacquered with a thin clear lacquer.

Blueing-solution for Gun-barrels

Liq. antimon. chlorid. The process is, however, secret.

Old-bronze Solution

Bronze is an alloy of copper and tin, generally containing also a varying proportion of other metals, such as zinc, lead, &c. The colour of antique-bronze ornaments is often imparted to modern productions by the following process:—

Chloride of ammonium	ʒiiss.
Salt of sorrel	ʒj.
Dilute acetic acid	Oj.

Dissolve.

To be applied carefully with a fine camel-hair pencil in a warm room, and repeated until the proper tint is produced.

Process for Blackening Brass

The following process will be found to work admirably, and is easy of application:—Dissolve copper foil or filings in strong nitric acid nearly to saturation, but leaving a slight excess of acid to bite the metal to be blackened. Heat the metal in a smokeless flame, and brush on the nitrate-of-copper solution exactly as in lacquering.

Hatter's Black

Logwood . . .	1 lb.
Bichromate of potash .	½ oz.
Sulphate of iron . .	1 oz.
Water	1 gal.

Boil together and strain.

USEFUL PHOTO. FORMULAS.

Pyro. Developers

I

(A)

Pyrogallic acid . .	℥j.
Potassium metasulphite .	℥v.
Water	℥xl.

Dissolve.

(B)

Sodium carbonate . .	℥v.
Water	℥xl.

Dissolve.

Directions.—To make 1 oz. of developer, mix 1 dr. of A and 1 dr. of B with 6 dr. of water. Over-exposure requires less of B, and under-exposure more.

II

(A)

Pyrogallic acid . .	55 gr.
Metol	45 gr.
Metasulphite of potash .	120 gr.
Bromide of potassium .	15 gr.
Distilled water to . .	20 oz.

(B)

Sodium carbonate . .	4 oz.
Distilled water to . .	20 oz.

For use take equal parts of A and B.

Hydroquinone Developer

(A)

Hydroquinone . .	℥ss.
Sodium sulphite . .	ʒj.
Water to . . .	℥x.

(B)

Caustic soda . . .	ʒij.
Potassium bromide . .	ʒj.
Water to . . .	℥x.

For use for a quarter-plate, mix 80 min. of each, and dilute to 1 oz. with water.

Metol Developer

(A)

Metol	50 gr.
Sodium sulphite . .	1 oz.
Potassium bromide . .	6 gr.
Water to . . .	10 oz.

(B)

Potassium carbonate .	1 oz.
Water to . . .	10 oz.

For use, mix 3 parts of A with 1 part of B.

One-solution Developers

I

Eikonogen . . .	ʒij.
Sodium sulphite . .	℥iss.
Hot water . . .	℥viij.

Dissolve and add

Potassium carbonate .	ʒij.

Dissolve.

Directions for Use.—Dilute with an equal quantity of water.

II

Hydroquinone . .	ʒiiss.
Potassium metasulphite .	℈iv.
Distilled water . .	℥iv.

Dissolve.

Potassium carbonate .	gr. 840
Distilled water . .	℥iv.

Dissolve and mix with the above solution.

For use dilute with five times its volume of water.

LOZENGES

Most medicinal lozenges are made by the pharmacopœial process, but confectioners recognise several methods, depending upon the nature of the ingredients and whether they are combined in the cold or hot way. Lozenge-making, like every other art, requires practical experience, and cannot be taught in a book-chapter, but there is much in it so closely allied to pharmaceutical operations that a pharmacist can scarcely fail to turn out good products if he have the mechanical appliances for the purpose.

The simplest kinds of confectionery are boiled sweets and candies, made by dissolving sugar in water, boiling to a certain degree, and adding flavours, medicaments, and colourings. A large number of useful medicated sweets can be made in this way, without any exceptional apparatus except a brass jelly-pan, and good stone, slate, or iron slab to pour the 'boiling' on. Two degrees of boiling are suitable for pharmaceutical purposes. The first is adopted in making digestive candies. Here the sugar resumes its crystalline state on cooling. The second is exemplified in acid-drops and toffees, in which the sugar is in an amorphous condition.

The process for making the first, or Candy Boilings, is generally as follows :—Dissolve the sugar in half its weight of water (3 pints to 7 lbs. of sugar is the common proportion) by heating on an open fire (or by steam-heat), and boil until there is a scum, which remove. Now add the medicaments, &c., carefully and gradually, cover the pan, and heat to a temperature of 250° to 255° F. This is what confectioners call the degree of 'ball.' The slab should by this time be ready to receive the boiling, having been well washed, dried, and rubbed very lightly with olive oil. Pour the boiling upon it to a depth of an eighth to a quarter of an inch, and allow to cool. When cold score the surface to the required size, and break up. It is important not to exceed the temperature 255° F., otherwise the boiling will go into the amorphous condition, and become sticky.

The second degree is that of 'crack,' and is conducted precisely in the manner described, but the boiling is continued to 310° or 315° F. After pouring it on the slab, the boiling is manipulated while it is pliable and sufficiently cool to handle, the flavours being added and worked in. It is cut while in this condition either by means of a machine-mould or with a sharp knife.

The following preparations are made by these methods :—

Acid Drops

Granulated sugar	28 lbs.
Water	1 gal.
Cream of tartar	1½ oz.
Tartaric acid	½ lb.
Oil of lemon	2 dr.

Boil the sugar and water, add the cream of tartar, boiling to the degree of 'crack'; pour on the slab, work in the acid and lemon when cool enough, knead well, and cut into drops.

Cough-drops

1. Chlorodyne

Granulated sugar	14 lbs.
Chlorodyne	½ oz.
Tincture of tolu	½ oz.
Cream of tartar	½ oz.
Oil of anise	1 dr.
Water	4 pints

Proceed as for acid drops, adding the chlorodyne, tincture, and oil to the mass on the slab.

II

Boil 2 oz. of bruised liquorice-root, 1 oz. of Iceland moss, 1 oz. of boneset, 2 oz. of marshmallow-root, and ½ oz. of hops in 3 pints of water to one-half. Let stand till cold, then strain and press off the liquid through a hair sieve. To each 16 oz. of the liquor add 2 lbs. of sugar; place on the fire and stir till the sugar is dissolved, add a teaspoonful of cream of tartar, and boil to the 'crack.' Pour on the slab, and cut when ready.

III

Granulated sugar	14 lbs.
Glucose	3 lbs.
Tartaric acid	3 oz.
Paregoric elixir	2 oz.
Oil of anise	3 dr.
Water	4 pints

Proceed in the same manner as No. 1.

IV. Extra Strong

Granulated sugar	9 lbs.
Brown sugar	5 lbs.
Liquorice paste	1½ lb.
Liquid extract of poppies	2½ oz.
Tartaric acid	1½ oz.
Ipecacuanha powder	1 oz.
Tincture of tolu	1 oz.
Oil of anise	½ oz.
Cream of tartar	½ oz.
Water	4 pints

Melt the sugars in the water, and

bring them to a sharp boil. Add the cream of tartar, and continue to boil to the degree of crack; put in the extract of poppies and liquorice paste, and continue to boil for five minutes, then pour upon the slab and add the remainder of the flavouring ingredients. Work thoroughly and cut into tablets.

Bismuth Tablet

Precipitated chalk	℥viij.
Carbonate of magnesia	℥vj.
Subnitrate of bismuth	℥ij.
Granulated sugar	lb. ij.
Rose-water	℥xvj.
Oil of cinnamon	♏xl.

Dissolve the sugar in the rose-water by heating, bring to the boil, and sift in the chalk and magnesia mixed, continuing the heat to 250° F.; add the bismuth and the oil, stir, and pour on the slab. When cold, score into squares and break up.

Digestive or Live-long Candy

I

Powdered ginger	ʒij.
Powdered rhubarb	ʒiij.
Carbonate of magnesia	℥j.
Granulated sugar	℥xvj.
Water	℥viij.
Oil of peppermint	ʒss.

Prepare in the same manner as bismuth tablet.

II

Powdered rhubarb	℥ss.
Powdered ginger	℥j.
Granulated sugar	℥xvj.
Cochineal colouring	ʒiss.
Oil of cinnamon	♏x.
Oil of caraway	♏xv.
Menthol	gr. v.
Oil of lemon	♏xv.

Prepare as above.

III

A formula used by one of the most celebrated makers.

Pulv. acaciæ	4 lbs.
Pulv. zingib.	3 lbs.
Pulv. rhei	1½ lb.
Sodii bicarb.	1 lb.
Pulv. cardam	½ lb.

Mix well together and add to a solution of

Sacch. alb.	96 lbs.

in

Aq. dest.	16 pints

Heat, and stir briskly until thick. Remove the heat, and, at as low a temperature as possible, add

Ol. limonis	12 oz.

Pour into greased tins, and cut into squares with a spatula.

Heartburn-tablet

Precipitated chalk	2 lbs.
Armenian bole	6 oz.
Sugar-candy	4 lbs.
Water	1 pint
Oil of cinnamon	1½ dr.

Prepare in the same manner as bismuth tablet.

Liquorice Drops

Granulated sugar	14 lbs.
Glucose	2 lbs.
Extract of liquorice	2 lbs.
Water	4 pints
Oil of lemon	½ dr.
Essence of pear	1 dr.

Boil to the degree of crack all the ingredients except the flavouring, which add immediately before pouring on the slab.

The proportions of sugar and water directed for acid drops can be adopted for any kind of sweets required, omitting the cream of tartar and adding the flavour and colour desired. The average quantity of essential oil to add is 15 minims to each pound of sugar, and the better the oils the smaller the quantity required. The powder used for dusting boilings is icing-sugar.

The lozenges of the British Pharmacopœia are made like a pill-mass. That is another way of saying that the confectioner makes the lozenge-paste in the same manner that a baker makes dough. The Pharmacopœia gives methods and formulas for four distinct bases (*see* B.P. 1898, p. 441). The appliances necessary for making lozenges on the small scale are a smooth marble slab, with adjustable sides, to cut the lozenges upon; a smooth stone slab to mix the paste on; a rolling-pin; lozenge-cutters; a good palette-knife, 15 inches long; a brush, made with long, soft hairs; linen cloth to run through cutters when clogged with the paste; lozenge-trays, made of smoothly-planed seasoned deal, 4 feet long by 2 feet wide, with edges 1 inch deep; a hot-closet or drying-room, with racks fitted round it to place the trays of lozenges upon, and heated, free from dust and smoke. Small gallipots of water must be kept near the cutting-slab to place the cutters in to free them from the paste which clings to the edges.

The essential ingredients of lozenges are finely-powdered or icing sugar, a mucilage of picked gum arabic, and the flavouring agents. The method of procedure is illustrated in the preparation of Peppermint Lozenges. The confectioner takes 28 lbs. of icing-sugar, and makes a heap of it on the slab, with a big hole in the centre of the heap, pours in 4 pints of thick acacia mucilage, and on that 1 oz. of peppermint oil, working the liquids well together. When sufficiently mixed, the sugar from all round the sides is stirred in, making the whole into a stiff paste with as much of the sugar as can be used. If it is too stiff more mucilage is added, if too sticky more sugar. The paste is now ready to roll out. Take about 2 lbs. from the bulk and work it with the hands into a compact square piece, keeping it from sticking to the slab by means of powdered starch. It is customary to cover the mass with a damp linen cloth, as it may become brittle and unmanageable in the course of a few hours. A portion of the mass is next rolled out upon the slab with the sides adjusted to a height equal to the thickness of the lozenges desired, and the lozenges are cut out with a punch. While the mass is being rolled it is sprinkled with icing-sugar from a dredging-box to prevent it sticking to the rolling-pin. The lozenges are transferred to a tray, exposed to dry air for twelve to twenty-four hours, then placed in the drying-cupboard until hard. The following lozenges are made in this manner :—

Aperient Lozenges

Icing-sugar	℥xvj.
Sulphur	℥x.
Cream of tartar	℥ij.
Calcium bisulphite	℈v.
Tincture of capsicum	ʒij.
Ipecacuanha wine	ʒij.
Acacia mucilage	a sufficiency to mass

Divide into 25-gr. lozenges.

Dose: One to three lozenges, taking a glass of water afterwards.

Anodyne Cough-lozenges

Extract of white poppies	℥iv.
Extract of liquorice	℥iv.
Powdered acacia	℥iv.
Icing-sugar	℥xvj.

Mix together, making into a lozenge-paste with distilled water, in the manner directed for trochisci opii, B.P. Divide into 10-gr. lozenges, and dry.

One of these lozenges may be taken every four hours.

Bronchial-lozenges

Preparation A

Cubeb-powder	℥ss.
Stockholm tar	℥ss.
Oil of wintergreen	♏xx.
Solution of potash	ʒvj.
Orange-flower water to	℥iv.

Macerate for twenty-four hours in a warm place, shaking occasionally; then filter through kaolin.

Preparation B

Marshmallow	℥ij.
Horehound	℥ij.
Liquorice	℥ij.
Aniseed	℥ij.
Lobelia-seeds	℥ss.
Hops	℥ss.
Ipecacuanha	ʒij.
Cayenne	ʒij.

Roughly bruise, and add to 1 gal. of water; boil, and allow to simmer for some hours; press and strain, then evaporate to about 30 oz.; add the infusion of cubebs, diluted with 4 oz. of rectified spirit, and filter.

Two ounces of this preparation to be added to 14 lbs. of lozenge-basis.

Brompton Hospital Cough-lozenges

Extract of liquorice	gr. iij.
Oil of anise	♏ss.
Lozenge-basis	gr. xv.

For one lozenge.

Cayenne Lozenges.

Icing-sugar	lb. ij.
Capsicin	ʒss.
Spirit of rose	ʒij.
Cochineal colouring	ʒij.
Acacia mucilage	a sufficiency

Knead into a paste, and cut into lozenges.

Chlorodyne Lozenges

Icing-sugar	℥xvj.
Comp. powder of tragacanth	℥ss.

Mix, and add the following ingredients, previously well mixed together :—

Chloroform	ʒiss.
Oil of peppermint	♏xx.
Tincture of capsicum	♏xx.
Solution of muriate of morphia	℥j.
Mucilage of acacia	℥iij.

Knead into a mass, and divide into 20-gr. lozenges.

Cough-lozenges

I

Powdered ipecac.	1 oz.
Citric acid	1 oz.
Liquorice-juice	1 lb.
Oil of anise	2 dr.
Icing-sugar	12 lbs.
Acacia mucilage	a sufficiency

Soak the liquorice-juice (coarsely powdered) in 10 oz. of water overnight, then boil. Mix the ipecacuanha and acid with the sugar, sifting several times. Put the strained liquorice into it, then the oil and mucilage. Stir up, and knead into a paste.

II

Lactucarium	ʒij.
Powdered ipecac.	ʒj.
Powdered squill	℈ij.
Extract of liquorice	ʒij.
Icing-sugar	℥ij.
Mucilage of tragacanth	a sufficiency

Make a paste, and divide into 20-gr. lozenges.

No. I. is the ordinary brown cough-lozenge. No. II. is said to be like Keating's.

Skelton's Pulmonary Lozenges

The following is the formula given in Skelton's 'Practice of Medicine,' but the product is not the same as the proprietary lozenge.

Sugar (fine white)	℥xvj.
Tincture of tolu	℥j.
Antispasmodic tincture	℥ss.
Oil of peppermint	gtt. xx.
Gum arabic	sufficient

Form the whole into a mass, cut out, and prepare in the form of lozenges.

Ginger Lozenges

Powdered ginger	8 oz.
Oil of lemon	2 dr.
Vegetable yellow	a sufficiency
Icing-sugar	12 lbs.

Make into a paste by the usual method.

Laxative Lozenges

(Resembling Tamar Indien.)

Pulv. sennæ	gr. v.
Pulv. jalapæ	gr. v.
Ol. anisi	gtt. $\frac{1}{8}$
Ol. limonis	gtt. $\frac{1}{8}$
Pulv. sacch. alb.	gr. v.
Pastæ tamarind.	ʒss.

Make into one lozenge, and coat with chocolate-and-sugar paste, as below :—

Cadbury's cocoa essence	3 oz.
Powdered sugar	6 oz.
Cocoa-butter	4½ oz.

Melt the cocoa-butter, add the other ingredients, and mix.

During the past few years lozenges made by compression have become very popular in Great Britain. They consist of the dry ingredients of lozenge-paste, with 1 oz. of powdered acacia to the pound, the whole being intimately mixed and granulated before compression.

Black-currant Paste, which is now much used in medicinal-lozenge making, is directed to be made by the Throat Hospital Pharmacopœia in the following manner :—Take 7 lbs. of black currants and 1 pint of water, and boil together, crushing the berries with a pestle until the mixture is thoroughly pulped, then pass through a sieve and beat into a paste with 3 to 4 lbs. of powdered sugar. In the same way red-currant paste is made. This method is open to improvement, but on the whole it gives a good paste, and is the recognised thing. The first two formulas following are examples of the T.H.P. prescriptions :—

Trochisci Cubebæ

Cubebs, in powder .	200 gr.
Extract of liquorice .	1,225 gr.
Tragacanth, in powder	70 gr.
Refined sugar . .	200 gr.
Black-currant paste .	a sufficiency

Prepare and divide into 350 lozenges. To be marked C.B.

Trochisci Krameriæ

Extract of rhatany in powder . .	1,050 gr.
Tragacanth . .	70 gr.
Refined sugar . .	280 gr.
Red-currant paste .	a sufficiency

Prepare and divide into 350 lozenges. To be marked R.

Voice-lozenges

Powdered cubebs . .	gr. ½
Benzoic acid . . .	gr. ⅓
Cocaine hydrochloride .	gr. $\frac{1}{10}$
Powdered tragacanth .	gr. ¼
Extract of liquorice .	gr. v.
Sugar	gr. x.
Eucalyptol . . .	♏ ¼
Oil of anise . . .	♏ $\frac{1}{20}$

Black-currant paste to make one lozenge.

Directions.—Nibble about a quarter of a lozenge immediately before singing or speaking.

The lozenges should be sprinkled, before drying, with finely-crystallised sugar.

Gelatine and Gum Goods, as jujubes are called by confectioners, are made from the best picked gum arabic and sugar, and only the inferior kinds contain gelatine. The common proportions are :—Gum arabic, 32 lbs. ; sugar, 14 lbs. ; water, 2 gals. These are warmed by steam-heat until, with occasional stirring, the gum and sugar are dissolved, then strained. Some makers dissolve the gum alone in the water, strain, then add the sugar, and heat until it is dissolved. Solution effected, the preparation must be steadily heated until it attains a proper pourable consistency. When it is approaching this point the colouring and flavouring materials are added, the whole well mixed, and poured to the depth of about half an inch or so in oiled tin trays (jujube-boxes), or, if to be in the form of pastilles, the thick syrupy liquid is poured into moulds made in trays of farina. These trays are next put into the drying-rooms for a period varying from four to six or seven weeks. It is in this way that Voice-jujubes are made, the colouring being cochineal and a trace of liquorice, the flavours capsicin with traces of tolu, prunes, &c. Delectable Jujubes are similar without the capsicin, and Glycerine Pastilles have 2 lbs. of glycerine added to the above quantities of gum and sugar. The last-mentioned pastilles are often coated with a plain solution of gelatine to prevent them sticking. This is done exactly in the same way that pills are coated with gelatine. The crystallisation of gum goods is done by putting the jujubes into special crystallising-tins, and filling the tins with a blood-warm syrup consisting of 24 lbs. of sugar and a gallon of water. At the end of twelve hours (more or less according to the extent of the crystallisation desired) the syrup is drained off, and the jujubes dried. Glyco-gelatine Pastilles are made with either of the following bases :—

I. T.H.P.

Refined gelatine . .	℥j.
Glycerine (by weight) .	℥iiss.
Ammoniacal solution of carmine . . .	q.s.
Orange-flower water .	℥iiss.

The gelatine is soaked in the water for two hours, then heated on the water-bath till dissolved, and the glycerine added. The carmine solution is added after cooling.

II. 'Art of Pharmacy'

Transparent French gelatine	℥iv.
White sugar . . .	℥iv.
Glycerine . . .	℥iiss.
Water sufficient to make	16 fl. oz.

Prepare in the same way as No. I. This mass may be flavoured with 20 minims of oil of lemon, and for some combinations a small amount of citric acid is a decided improvement.

The medication of the pastilles is accomplished by melting 1 oz. of the glyco-gelatine on a water-bath, adding the medicine, previously rubbed to a thick syrup with glycerine if a powder, stirring until nearly cool, and forming into square or round pastilles, preferably the latter, which are easily obtained by using Bilson's mould (made by Toogood). Mr. F. E.

Bilson, of Bournemouth, who designed the mould referred to, has favoured us with the following formulas used by himself :—

Glyco-Gelatine
(Modified)

French gelatine . .	℥viij.
Glycerine (by weight) .	℥xx.
Tolu water . . .	℥xx.
Ammoniacal solution of carmine . . .	ʒiij. ♏xij.

Prepare as already directed.

Ammonium Chloride Pastilles

Ammonium chloride	ʒiij. gr. xij.
Ammonia glycyrrhizinate . . .	gr. xxiv.
Glyco-gelatine (without carmine) . . .	℥viij.

To make 96 pastilles, each containing 2 gr. of the chloride.

Cocaine Pastilles

Cocaine hydrochloride .	gr. xij.
Citric acid . . .	gr. xxxij.
Oil of lemon . .	♏xxiv.
Glyco-gelatine . .	℥viij.

To make 96 pastilles, each containing $\frac{1}{8}$ gr. of cocaine.

Morphine and Ipecac. Pastilles

Morphine acetate .	gr. ij$\frac{2}{3}$
Ipecacuanha vinegar .	♏clx.
Oil of lemon . .	♏xxiv.
Citric acid . . .	gr. xxxij.
Glyco-gelatine . .	℥viij.

To make 96 pastilles, each containing morphine acetate $\frac{1}{36}$ gr. and ipecacuanha $\frac{1}{12}$ gr.

The tolu water to be used in the above is the B.P. liquor for making syrup of tolu. It is an agreeable variant from the orange flavour, and some prefer it. Mr. Bilson's mould, if well filled, makes pastilles twelve of which weigh 1 oz. It is best not to oil the mould, but do not pour the mass in too hot, and allow to flow over a spatula. We give the following as a further example of the method of procedure :—

Menthol Pastilles

Gelatine	℥j.
Glycerine (by weight)	℥iiss.
Orange-flower water	℥iiss.
Menthol	gr. v.
Rectified spirit	ʒj.

Soak the gelatine in the water for two hours, then heat on a water-bath until dissolved and add 1½ oz. of the glycerine. Dissolve the menthol in the spirit, mix with the remainder of the glycerine, add to the glyco-gelatine mass, and pour into an oiled tin tray (such as the lid of a biscuit-box). When the mass is cold divide it into ten dozen pastilles.

The process is an excellent one for extemporaneously preparing throat-pastilles to the physician's order ; few articles of elegant pharmacy being so quickly and easily prepared. Many specialities for retail can also be made in the same manner, and they yield a good profit.

Liquorice Basis.—Sir James Sawyer recommends lozenges to be made extemporaneously with pasta glycyrrhizæ alba, or *pâté de réglisse blanche* ('Beasley's Pocket Formulary,' 1886 edition) :—

Take of decorticated liquorice-root ℥iv., water Oiv. ; macerate for twelve hours ; strain and add lb. iiss. of picked gum arabic and lb. iiss. of refined sugar ; dissolve, strain, and evaporate to the thickness of honey, constantly stirring, and add gradually the whites of twelve eggs well beaten with ℥iv. of orange-water ; evaporate with constant stirring till the paste is so firm as not to adhere to the hands.

Any drug or drugs can be combined with the paste, 10 gr. of which is used for each lozenge.

Cachou Aromatise

I

Powdered mace .	. 216 gr.
Powdered cardamoms .	. 154 gr.
Powdered vanilla .	. 283 gr.
Powdered cloves .	. 77 gr.
Powdered orris-root	. 309 gr.
Powdered musk .	. 15 gr.
Oil of neroli .	. 20 drops
Oil of cinnamon .	. 30 drops
Oil of lemon .	. 40 drops
Oil of peppermint	. 60 drops
Extract of liquorice	. 2 oz.
Chocolate . .	. 3 oz.

Syrup to make a mass.

Divide into small pills and silver.

II

Musk in powder .	. gr. ss.
Cardamoms in powder	. gr. viij.
Ginger in powder .	. gr. xv.
Orris-root in powder	. gr. xv.
Liquid storax . .	. ʒss.
Sugar in powder .	. ʒiiss.
Tragacanth in powder	. ʒss.
Peppermint oil .	. ♏iij.

Syrup to make a mass.

Divide into 300 pills.

III

Succ. solazzi . .	. ℥iij.
Aquæ . . .	. ℥iij.

Dissolve by the heat of a water-bath, and add

Pulv. catechu . .	. ℥j.
Pulv. acaciæ . .	. ℥ss.

Evaporate to the consistence of an extract, and then incorporate the following substance in a fine powder :—

Pulv. mastic. . .	. ʒj.
Pulv. cascarillæ .	. ʒj.
Pulv. carbo. ligni .	. ʒj.
Pulv. iridis rad. .	. ʒj.

Reduce the mass to a proper consistence, remove it from the fire, and add

Ol. menth. pip. .	. gtt. xxx.
Essent. ambergris .	. gtt. x.
Essent. moschi .	. gtt. x.

Mix, and divide into 1-gr. pills.

To make the small diamond cachous omit the catechu, use ½ oz. of charcoal, the same of syrup, and the following flavour : Menthol ℈j., otto of rose ♏v., musk essence ♏xv., heliotropin gr. ij. Roll out flat and cut with a palette-knife.

The tabellæ of the British Pharmacopœia are small chocolate and sugar lozenges. The method of making them is described on p. 619.

MISCELLANEOUS PREPARATIONS

SOME formulas, like folk, refuse to be classed. We may call them Bohemian. Of such this chapter is composed. Many agricultural specialities are included, but we make no attempt to deal with veterinary matters here, as these already form the subject of a treatise published by the proprietors of *The Chemist and Druggist.*

Anti-incrustation Fluids

These preparations for preventing boiler-scale consist generally of a 10-per-cent. solution of soda ash in water with or without astringent matter, such as tanners' or wattle bark, catechu gruffs, and eucalyptus-leaves (1 lb. to the gallon).

Arsenical Soap for Taxidermists

I

Powdered camphor	ʒvj.
White arsenic	℥iv.
Slaked lime	℥iv.
Carbonate of soda	℥xij.
Soft soap	℥iv.
Water	a sufficiency

Mix in the above order to make a stiff paste.

II

Powdered camphor	℥iiss.
White arsenic	℥xvj.
White soap	℥xv.
Carbonate of potash	℥vj.
Quicklime	℥ij.
Oil of origanum	ʒij.
Boiling water	a sufficiency

Mix all the powders; boil the shredded soap with water to a jelly, add to the powders with the oil and sufficient water to make a stiff paste.

Ant-poison

Cape aloes	1 lb.
Water	1 gal.

Dissolve and add

Camphor-flowers	6 oz.

Mix the aloes decoction slowly with the camphor.

How to Use this: Pour it into the ants' nests, brush trees and plants which they infest with it, and put some of it wherever they are a nuisance.

Paraffin oil alone or with 4 oz. of naphthalin or camphor to the gallon, is also good for getting rid of ants.

Battery Solutions

I

Bichromate of potash	ʒiv.
Bisulphate of mercury	ʒss.
Sulphuric acid	ʒv.
Water	℥vj.

Dissolve the two salts in the water and cautiously add the acid with constant stirring.

II. Liq. Electropœicus, N.F.

Sodium bichromate	140 grammes
Sulphuric acid .	300 c.c. .
Water . .	1,000 c.c.

Pour the acid upon the bichromate in powder, and stir the mixture occasionally for an hour, then add the water slowly.

This is for the galvano-cautery. For ordinary bichromate cells use 125 grammes of bichromate, and 125 c.c. of acid. Pot. bichrom. may be used.

III. Leclanché

A saturated solution of sal ammoniac.

The Electric Dry Cell contains a zinc cylinder and within it a carbon plate. The inner surface of the zinc is coated with a mixture of plaster of Paris 5 parts, sal ammoniac 2 parts, and water 11 parts. After this hardens the carbon is inserted, and the space between filled with the following:—

	Parts by weight
Powdered carbon or graphite . . .	75
Coarsely-powdered black oxide of manganese .	10
Sulphate of zinc . .	5
Sal ammoniac . .	15
Glycerine . . .	2
Water . . .	a sufficiency

Make a paste. Afterwards seal the cell with melted pitch.

Billiard-ball Colouring

Old balls are greasy, and do not take on the colour well until they are cleaned. Most people who try the dyeing omit the cleaning, so fail. The way to proceed is as follows:—

First: Wash the ball by immersing in benzine for a few minutes; take it out, pour some benzine over it, and wipe dry.

Second: Dip it in an acid bath—30 drops of nitromuriate-of-tin solution to 3 oz. of water. Allow to remain in the bath for a few minutes.

Third: Give it the dye-bath.

The following are some of the best dye-baths:—

Red

(1) Aniline cardinal, 1 in 20 of water; or equal parts of Judson's cardinal and water.

(2) Powdered cochineal ʒj., stannous chloride ʒj., water ℥xij.; boil and strain. Use warm.

(3) Carmine 3 gr., ammonia solution to dissolve, water to ℥j.

(4) A spirituous solution of fuchsine.

Blue

Methyl blue gr. x., water ℥j., or equal parts of Judson's Oxford blue and water.

Green

Judson's green and water, equal parts.

NOTE.—The colours must be applied after the nitro-muriate bath. Equal parts of nitric acid (1 in 3) and stannous-chloride solution (10 per cent.) may be used. The dyes act just as well in methylated-spirit solution, which, indeed, penetrates better. Polish the balls with linseed oil.

Bird-food

Pea meal . . .	℥xvj.
Coarse sugar . . .	℥viij.
Fine grated bread (stale) .	℥viij.
Fresh butter . . .	℥ij.
Yolks of eggs . . .	℥ij.

Mix these well together and brown gently in a frying-pan. When cold mix well with

Poppy-seeds . . .	℥ij.
Bruised hempseed (separated from the husks) .	lb. ij.

Blocking-powder

Powdered resin . .	℥ix.
Powdered sandarac . .	ʒj.

Mix.

Butter and Cheese Colouring

I

Best roll annatto . .	℥xvj.
Carbonate of potash .	℥viij.
Water	Cong. j.

Cut the annatto into small pieces, add the carbonate of potash, and allow to soak in the water for an hour or two; then boil until the whole of the annatto is apparently dissolved. Set aside to cool, add 2 oz. of borax, and strain.

A teaspoonful of this is added to each 10 gals. of milk in cheese-making.

The solution can also be used for colouring butter, but is now superseded by the following:—

II

Oil-soluble aniline orange	℥j.
Olive oil . . .	Cong. j.

Dissolve the colour in the oil by gentle warming.

With Whitlock's oil-orange this gives a colour equal in depth to that produced with 8 oz. of the oil-yellow. Nut oil or cottonseed oil may be used in place of olive oil. A teaspoonful of the colouring is sufficient for 10 gals. of cream. This is the popular colouring nowadays.

III

Ethereal extract of annatto	ʒj.
Olive oil . . .	Oj.

Dissolve.

Instead of the ethereal extract a resin prepared as follows may be used:—Exhaust annatto with warm spirit by double maceration; evaporate the liquors to dryness and extract the colouring resin from the residue with sodium-carbonate solution (1 in 10); strain and precipitate the resin with dilute sulphuric acid, collect on a filter, wash it well with warm water, and dry. The product is not so strong as the ethereal extract, and ʒj. to ʒij. of it must be used for a pint of oil.

Colourings with turmeric, saffron, and the like have now gone out of favour because they impart an unnatural taste to the butter.

Butter-powder

Bicarbonate of soda .	4 lbs.
Chloride of sodium . .	1 lb.
Aniline orange . .	10 gr.

Triturate the colouring with the salt, mix with the bicarbonate, and sift.

Bicarbonate of soda alone and uncoloured is also sold for butter powder; also a mixture of cream of tartar and bicarbonate of soda, equal parts.

Calf-meal

Crushed linseed . .	7 lbs.
Barley meal . . .	14 lbs.
Wheat meal . . .	14 lbs.

Mix.

Directions.—Make two tablespoonfuls into a thin paste with cold water, and pour a quart of boiling water on it, stirring all the time as in making gruel. A mixture of equal parts of milk and water is better.

Canary Colouring and Food

Canary-colourings are used as soon as the birds begin to feed themselves, or when they are moulting, as then the feathers are soft and take in the colouring easily. Tasteless or sweet cayenne is the best substance for this purpose, but turmeric, alkanet, saffron, beetroot, and aniline dyes are also used. The colouring is generally mixed with breadcrumb or biscuit, with or without sugar. As a supplementary food chopped eggs, marigold florets, and nasturtiums are sometimes given. Subjoined are formulas based on analyses of proprietary foods and colourings :—

I

Powdered sweet cayenne .	gr. ij.
Powdered turmeric . .	gr. ij.
Sugar	℥j.

Mix.

One or two teaspoonfuls with the food.

II

Powdered sweet cayenne.	℥ss.
Powdered turmeric . .	ʒiij.
Peroxide of iron . .	ʒj.
Sugar	℥j.

Mix.

Put a good pinch of this in the seed-box.

Mixed Seed

One part each of mustard and maw seeds, 4 parts each of hemp and rape, and 32 parts of canary-seed.

Antiseptic Wash for Cage-birds

Chinosol F . . .	ʒij.
Sacchar. ust. . . .	♏xx.
Aq. cinnamomi . .	℥iv.
Aq. ad	℥xx.

Mix, and when solution is complete filter.

Directions.—Add one or two teaspoonfuls to the bath-water, and allow the birds to use it, when it will quickly destroy all traces of parasites or germs in the feathers, so keeping the birds in a healthy and lively condition. For washing out the cages use a mixture of one tablespoonful in a pint of hot water.

Cage-birds' Tonic

I

Pulv. capsici . . .	℈j.
Pulv. gentianæ . .	ʒj.
Ferri peroxidi . . .	℥ss.
Pulv. sacch. alb. . .	℥ss.
Theriacæ . . .	q.s. ut fiat massa

Put a piece the size of a pea into the cage daily.

II

For coughs, asthma, congestion of the lungs, &c., in all kinds of song-birds—a certain cure for soft moult.

Tr. ferri perchlor. . .	ʒj.
Ac. hydrochlor. dil. .	ʒss.
Glycerini . . .	ʒiss.
Aq. camph. ad . .	℥j.

Mix and colour with liq. cocci to a pale pink tint. Filter.

Dose : Three to six drops in the water.

Red Mite in Canaries

To get rid of this parasite well dust the bird with insect-powder, especially under the wings, and as a further precaution paint the cage with ol. pini sylvestris, working it well into the cracks and crevices of the cage. A handkerchief or white cloth thrown over the cage every night will attract the insects after the cage has been painted. Remove the handkerchief in the morning and destroy the parasites. If the bird takes a bath add a teaspoonful or so of infusion of quassia to the bath-water, or some of the Antiseptic Wash.

Carboy-colours

Amethystine

Salicylate of soda . .	10 gr.
Tincture of perchloride of iron	½ dr.
Water	2 gals.

Dissolve the salicylate in the water and add the tincture.

Blue

Sulphate of copper	4 oz.
Solution of ammonia	a sufficiency
Water	2 gals.

Dissolve the sulphate of copper in 2 pints of water, and add solution of ammonia with constant stirring until the precipitate is redissolved, then add the rest of the water.

Canary

Picric acid	2 oz.
Water	2 gals.

Dissolve.

Emerald

Sulphate of nickel	3 oz.
Sulphuric acid	6 oz.
Water	2 gals.

Dissolve the sulphate in the water, and add the acid, stirring constantly. Allow to deposit, and decant.

Fluorescent and Dichroic.

Nearly fill the carboy with water, then add a solution of 10 gr. of fluorescein (or uranine) in 1 oz. of rectified spirit, and mix. This makes a very pretty fluorescent solution, but as it becomes mouldy in a month or two it requires the addition of 20 drops of formalin, which should be dropped in when the carboy is put in its place, and not mixed.

Garnet.

Bichromate of potash	1 lb.
Sulphuric acid	16 oz.
Water	2 gals.

Dissolve the bichromate in the water, then add the acid gradually, stirring all the time.

Green

Sulphate of copper	1 lb.
Common salt	3 lbs.
Hydrochloric acid	1 pint
Water	2 gals.

Dissolve the sulphate and salt in the water, add the acid, and set aside for several days, then decant the clear solution.

Opalescent

Oil of pimento	½ dr.
Rectified spirit	2 oz.
Water	2 gals.

Mix and expose to the air for a week or so, then filter.

Orange

Bichromate of potash	1 lb.
Nitric acid	8 oz.
Water	2 gals.

Dissolve the bichromate in the water, and add the acid.

Pink

Chloride of cobalt	1 oz.
Carbonate of ammonia	1½ oz.
Water	2 gals.

Dissolve the chloride of cobalt in 1½ gal. of water, and the carbonate of ammonia in the rest, then add the latter solution to the former until the precipitate at first formed is redissolved.

Purple

Permanganate of potash	40 gr.
Sulphuric acid	1 dr.
Water	2 gals.

Dissolve.

Red

Iodine	3 dr.
Iodide of potassium	3 dr.
Hydrochloric acid	10 oz.
Water	2 gals.

Dissolve the iodine and iodide in 8 oz. of water, and dilute with the rest, to which the acid has been added.

Rose

Cudbear	2 oz.
Water	10 oz.

Macerate for a day or two, filter, and add to the water till the required shade is produced. Then add to each gallon

Strong solution of ammonia	½ oz.

NOTE.—Any colour can be deepened by omitting water—*i.e.*, stopping the addition of water when the desired shade is reached. On the contrary, the colours may be lightened by adding more water. Distilled water should be used, and the solutions must not be filtered through paper. It is best to let them deposit, then decant; or, if filtration is desired, plug the neck of a funnel with glass wool, and strain through that.

Organic colours rapidly fade; this applies to aniline colours as well. Rosaniline, magenta, violet, and green make pretty shades of solutions, and if one does not object to renewing them once a fortnight, they cannot be improved upon.

Coloured-film Coatings

Solutions of aniline dyes in spirit mixed with shellac-varnish are used for coating the inside of carboys, so as to obviate the excessive weight of watery solutions, and the liability of these to freeze and thus crack the carboys during the winter months. The objection to the varnish coating is that it chips off. The following process is more satisfactory. It was devised by Mr. T. Maltby Clague, and we quote it from the *Pharmaceutical Journal*:—

Aniline dye	gr. xv. to xxv.
Gelatine (not opaque)	℥j.
Water	℥vj.
Carbolic acid	ʒj.

Soak the gelatine in water, dissolve the dye in warm water, and next add the softened gelatine and warm till melted, then add the carbolic acid. When the solution has cooled to about 150° F., pour it into the carboy, previously placed in a warm position until it has acquired a temperature of from 90° to 100° F. [A cloth dipped in hot water and carefully applied outside heats the carboy nicely.] Now keep turning it upside down and round about until the gelatine shows signs of setting, then put it on its stand and allow the jelly not adhering to the sides to settle to the bottom. Leave the stopper out for a few hours.

The following colours have been tried:—

Malachite green, a good colour to work with, and strikingly like sulphate-of-copper solution; about 25 gr. to 6 oz. is required. The colour fades somewhat, so that it is well to make it a trifle dark.

Methylene blue, 15 gr.; a rich colour very like ammonio-sulphate of copper.

Methyl violet, 15 gr., a rich bluish red; can be made to vary according to the dye used.

Flamingo gives the nicest red, 15 gr.

Browns may be obtained with Bismarck brown, brownish yellow with the same dye in smaller proportion; but the colours are not so striking as those already named. If the window is exposed to the sun, the film must be allowed to harden well before the carboy is placed in its position.

The objection to the films is that the lens effect of the carboys is almost wanting.

Cattle-condiment

Table-salt	8 lbs.
Barley meal	8 lbs.
Ground rice	4 lbs.
Pea meal	4 lbs.
Linseed meal	4 lbs.
Powdered gentian	1 lb.
Powdered fennel	1 lb.
Powdered fenugreek	1 lb.

Mix.

A few tablespoonfuls with each morning and evening feed.

CEMENTS AND LIQUID GLUES

Much of the success in applying cements depends upon the following factors :—

The surfaces to be united must be quite clean.

The less cement used the better.

There should be perfect contact between the cement and the surfaces. With this object heat the broken parts to such a point that the cement cannot solidify without having first had time to effect a perfect union. This is especially the case when using resinous materials.

Shellac is excellent for uniting metal to glass or stone, provided they are sufficiently heated to melt it. A small quantity suffices to make them adhere firmly together.

The principal obstacles to adhesion are air and dirt. All surfaces are covered with a thin layer of air which is very difficult to remove except by heat. Metals heated to about 170° F. are immediately moistened on being plunged into water ; hence it follows, as regards cements applied in a fused state, that heat is the best means of bringing them into intimate contact with the surface. Heat also renders the surfaces more penetrable to the cement.

There are some remarkable formulas for cements which are found in all the best books, and are quoted with consummate courage by journalists. We mention a few of these, and trust that this is the last time they will be printed.

I

Isinglass . . .	℥j.
Water	℥vj.
Mastic	ʒiv.
Rectified spirit . .	℥ss.

Dissolve the isinglass in the water with a gentle heat, add the mastic previously dissolved in the spirit, and shake well.

The mastic is, of course, precipitated as a clot, and the mixture is useless.

II

Isinglass . . .	1 part
Guttapercha . . .	2 parts
Caoutchouc . . .	4 parts
Carbon bisulphide . .	16 parts

This is for cementing the rubber tyres of bicycles. The oracle sayeth not how the stuff should be made, nor what good the isinglass may do floating threadlike in the jelly. Without the isinglass the cement is all right, but a trifle thick.

III

Isinglass . . .	℥j.
Water	℥vj.

Boil to 3 oz., and add

Methylated spirit . .	℥iss.

Strain and add

Ammoniac emulsion .	℥ss.
Tincture of mastic . .	ʒv.

Mix.

This has the same objection as No. 1., but in a less degree. It is weak.

IV

Powdered shellac . .	℥j.
Strong solution of ammonia	℥x.

'Dissolve. It is at first slimy, in three or four weeks becomes liquid, then hard and impermeable.' This is the sovereign cement for bicycle-tyres. We tried it, and at the end of a month found that the ammonia had extracted the colouring-matter, but the mixture never became slimy. Heating effects solution.

Many more like the above might be quoted. We now append a few formulas which can be trusted to go well.

China-cement

Russian isinglass, fine cut	℥j.
Powdered glue	ʒj.
Distilled water	℥ij.
Salicylic acid	gr. x.

Put the isinglass and glue in a gallipot, add the salicylic acid and the water, pressing down the isinglass with a pestle until it is all soaked. Place the gallipot in a saucepan of water, bring to the boil, stirring until dissolved; then add

B.P. acetic acid	℥j.

Mix well, and pour into bottles.

If the best isinglass is used this does not require to be strained, The glue is added to colour the cement, but may be omitted if a colourless preparation is needed.

Cue-cement

Isinglass	℥j.
Distilled water	℥ij.

Proceed as above, then add the following solution previously filtered :—

Ammoniac or sandarac	ʒss.
Rectified spirit	℥ij.

This thin varnish must be added very cautiously to the isinglass solution, otherwise the resin separates as a white clot which is difficult to dissolve. Keep the container in the hot water all the time that the varnish is being added drop by drop, and do not cease stirring. Thus made the mixture remains translucent until it becomes cold, when it sets as a tough opalescent jelly. It is not so suitable for glass as the china-cement, but a mixture of the two is good.

Calomel-and-gum Cement

Make calomel into a thin paste with fresh acacia mucilage. This is excellent for repairing composition mortars and earthenware generally.

Aquarium-cement

Venetian red	℥vj.
Peroxide of iron	℥ij.
Boiled linseed oil	a sufficiency

Make a stiff paste. Apply to the joints and give it a week or so to set.

London Zoo Aquarium-cement

Litharge	3 parts
Fine white sand	3 parts
Plaster of Paris	3 parts
Powdered resin	1 part

All by measure. Mix and make into a paste with boiled linseed oil, to which some drier has been added.

This is ready for use in four hours, and is useless twelve hours after mixing.

Litharge Cement

Finely powdered litharge made into a paste with glycerine—10 parts of litharge and 1 part (volume) of glycerine are the best proportions.

This is good for repairing pestles and similar purposes. It sets quickly, but is attacked by acids and alkalies.

For Pestle-handles

There is no method better than to heat the head of the pestle until it can scarcely be held in the hand. Pour melted shellac into the hole, then take the wood part, round the screw of which some soft twine has been wound, and press it 'home.' Keep under pressure if possible until the head of the pestle is cold.

Rubber Cement

(Bootmakers' Solution)

Guttapercha raspings	℥j.
Carbon bisulphide	℥v.

Dissolve.

Directions. — The solution is spread on each of the pieces of leather to be united. After a few minutes, when the bisulphide has evaporated, the rubber is heated over a gas-flame, the parts stuck together, and the upper one rubbed with a warm iron.

The same solution, but somewhat stronger, is used for bicycle-tyres. Half an ounce of common resin may be added to it with advantage.

Plaster-of-Paris Cement

(For uniting metal to glass)

Common resin . .	℥iij.
Caustic soda . . .	℥j.
Water	℥v.

Dissolve the soda in the water, add the resin and dissolve. With this, when required, mix 4 oz. of plaster of Paris (or 1 part by volume of the solution and 1 part by weight of the plaster).

Ivory-cement

Isinglass . . .	℥j.
Gelatine . . .	℥ij.
Water	℥x.

Soak until the solids are soft, then heat on a water-bath, and add

Zinc oxide . . .	ʒij.
Mastic	℈ij.
Rectified spirit . .	℥ss.

The addition of the hot solution must be made cautiously. First incorporate the zinc oxide, then put the mastic (dissolved in the S.V.R.) in a dish on a water-bath, and add the hot gelatine solution gradually, stirring constantly.

This has the objection of all cements containing mastic and gelatine with insufficient spirit. The mastic may be omitted for all the good it does.

Shellac Cement

Saturated solution of white or orange shellac in methylated spirit is used by stone-masons.

Terracotta and similar articles are best repaired with shellac melted by heat and applied to the warmed articles.

Silicate Cement

Powdered glass . .	℥j.
Powdered fluorspar .	℥ij.
Solution of silicate of soda	℥vj.

Mix quickly and use at once.

Cement for Electrical and Chemical Apparatus

Resin	5 lbs.
Beeswax . . .	1 lb.

Melt together and stir in

Red ochre . . .	1 lb.
Plaster of Paris . .	3 oz.

Mix well.

This is also used by lapidaries.

Marine Glue

Caoutchouc . . .	℥j.
Benzol	℥xx.

Dissolve and add

Powdered shellac . .	℥xx.

Heat on a water-bath cautiousl until the shellac is dissolved.

Other combinations go by the above name. This one is used for electrical apparatus.

Broken Mortars

Equal parts of guttapercha and shellac, fused together in an iron vessel, form a powerful cement. The fractured surfaces must be strongly heated, a little of the cement applied, and the pieces brought together under pressure.

Cement for White Letters

Enamelled letters for window-advertising may be applied with a paste made of dry white-lead and dammar varnish. This cement should be smeared uniformly over the back of the letter. Hollow letters should be filled with the cement.

To Fasten White-enamel Letters on Glass make a very thin paste of calomel and mucilage. Spread this thinly on the letters and press upon the glass so that as little as possible of the cement is left between the glass and the letters.

Glass to Brass. — Use plaster of Paris, adding to every 8 parts 1 of powdered sugar.

For Paraffin-pumps. — Finely-ground litharge mixed into a stiff paste with glycerine. Sets hard within twenty-four hours.

Cement for Brass.—Thin white-lead made into a stiff paste with red-lead.

Cement for Meerschaum Pipes.—Mix ordinary isinglass cement with calomel or finely-sifted white clay.

Casein or Cheese Cements are made preferably from fresh casein, precipitated from skimmed milk by acid, washing the precipitate well with cold water, and drying. This is used in a variety of ways—*e.g.*, (1) casein powder, 20 parts; quicklime, 4 parts: mix and add 1 per cent. of flowers of camphor. This powder to be made into a cream with water when required. (2) Casein powder, 2 parts; powdered borax, 1 part: mix; add a sufficiency of water when required. (3) Casein powder, 10 parts; slaked lime, 2½ parts; pearlash, 2 parts: mix and add water 20 parts.

Egg Albumen (fresh), 2 parts; quicklime, 1 part; water, 1 part: mix. This is used for cementing glass, porcelain, and similar goods.

Liquid Glues

I

French gelatine	1 lb.
Water	8 oz.

Allow to stand together in a 4-lb. gallipot until the glue is soft; then put the pot in a saucepan of water, and heat until the glue dissolves. Next add

Nitric acid	6 dr.

Stir until effervescence ceases, set aside for twelve hours, and decant.

II

Glue	℥x.
Water	℥xv.

Soak the glue in the water until soft, then add

Salicylate of soda	℥j.

and heat on a water-bath until dissolved. Then add

Oil of cloves	♏xx.
Rectified spirit	ʒiij.

Mix.

III

Liquid fish glue is said to be made from salt fish skins, especially cod skins. The skins are desalted, then boiled with water to dissolve the gelatine. The solution is strained, evaporated to the proper consistency, and a preservative added.

IV

Glue	℥iij.
Gelatine	℥iij.
Acetic acid	℥iv.
Water	℥ij.
Alum	ʒss.

Heat together for six hours, skim, and add

Rectified spirit	℥j.

Mix.

Cycle-oils

I

Sperm oil	℥viij.
Paraffin oil	℥iij.
Camphor	℥j.

Dissolve and mix.

II

Heavy paraffin oil coloured with alkanet.

No. I. is for burning only; No. II. for burning and lubricating.

Easter-egg Dyes

The following are German formulas for specialities which are very popular in Germany :—

Blue

Marine blue	ʒj.
Citric acid	ʒx.
Dextrin	℥ij.

Mix and divide into twenty packets. Each of the subjoined is also to be divided into twenty packets.

Chocolate Brown

Vesuvin	℥j.
Citric acid	ʒx.
Dextrin	℥j.

Mix.

Green

Brilliant green	℥ss.
Citric acid	ʒv.
Dextrin	℥ij.

Mix.

Orange

Azo-orange	ʒiiss.
Citric acid	ʒv.
Dextrin	℥iiss.

Mix.

Bright Red

Diamond fuchsin	ʒj.
Citric acid	ʒv.
Dextrin	℥iiss.

Mix.

Rose

Eosin	℈iiiss.
Dextrin	℥iij.

Mix.

Violet

Methyl violet	ʒj.
Citric acid	ʒv.
Dextrin	℥iiss.

Mix.

Yellow

Naphthol yellow	℥ss.
Citric acid	ʒx.
Dextrin	℥iiss.

Mix.

EASTER-EGG DYE

(Blue, &c.)

THE contents of this packet will dye a dozen eggs.

Directions.—Dissolve the dye in ½ pint of boiling water, stirring until dissolved. Boil the eggs for five minutes in plain water, then put them one by one into the bowl of dye, allowing them to remain for a minute or two until of the colour desired. Remove them, and allow to dry; then rub each egg with a little olive oil, polishing with an old handkerchief.

Egg-yellow for Bakers

Crocein B	℥ss.
Rectified spirit	℥ij.
Water	℥xviij.

Dissolve.

Used for imparting an egg-like tint to sponge-cakes.

Coloured Fires

NOTE.—The manufacture of coloured fires in a chemist's or any other public shop is prohibited by the Explosives Act. No person may compound coloured fires except in premises licensed for the manufacture of explosives. The penalty on conviction does not exceed 100*l.* for each day on which the premises have been so used.

The ingredients for coloured fires should be carefully dried and powdered separately. Potassium chlorate is not to be dried, simply powdered. They should be sifted and each put into a well-corked wide-mouth bottle, and so kept ready for mixing. They are mixed with a wooden spatula, and sifted several times.

We have space for one formula of each colour only.

Blue

Copper oxide	℥ij.
Sulphur	℥iv.
Chlorate of potash	℥vj.
Nitrate of potash	℥viij.

Mix.

Green

Black sulphide of antimony	℥j.
Sulphur	℥ij.
Chlorate of potash	℥ij. ʒj.
Nitrate of barium	℥vss.

Mix.

Red

Wood charcoal	℥j.
Sulphur	℥ij.
Chlorate of potash	℥ij.
Nitrate of strontium	℥viij.

Mix.

Violet

Wood charcoal	℥j.
Sulphur	℥ij.
Precipitated chalk	℥ij.
Chlorate of potash	℥ij. ʒvj.
Nitrate of potash	℥iij.

Mix.

White

Black sulphide of antimony	ʒvj.
Quicklime	℥j.
Sulphur	℥iiss.
Nitrate of potash	℥viij.

Mix.

Yellow

Nitrate of soda	℥viij.
Ground shellac (or button lac)	℥ij.

Mix.

Coloured flash-lights are mixtures of 2 oz. of powdered magnesium with 8 oz. of any of the foregoing.

Fire-extinguishers

The following solution is the best for filling bottles to be thrown upon the burning material :—

Common salt	℥j.
Nitrate of soda	℥j.
Sal ammoniac	℥ij.
Chloride of magnesium	℥iv.
Water	Oj.

Put the salts into a wine-bottle, and fill up with water. Shake until dissolved.

Fireproofing Solutions

I

Tungstate of soda	℥xvj.
Water	Oiss.

Dissolve in the cold, and add

Phosphate of soda	℥ij. ʒij.
Water	Oj.

or a sufficiency of water to make the solution sp. gr. 1·140.

II

Sulphate of ammonia	℥viij.
Carbonate of ammonia	℥iiss.
Boric acid	℥iij.
Borax	℥j. ʒvj.
Water	Ox.

Dissolve, then add

Starch	℥ij.

Stir until it boils.

These formulas have been tested by the Explosives Department of the Home Office. The first is the formula of that Department, and is used as follows :—Dip the material in the solution, wring out with the hands, dry, and iron if necessary. This is called the 'Home Office Method,' and is very commonly employed, especially for rendering theatrical wings uninflammable. The solution is not so good as No. II., which is used in the same way, but the material is dipped in the hot solution.

III

For Woodwork, Ropes, Straw Mats, Bags, &c.

Sal ammoniac	℥xv.
Boric acid	℥vj.
Borax	℥iij.
Water	Ov.

Dissolve.

Immerse the articles for fifteen or twenty minutes in the boiling solution, press, and dry.

IV

For Paper

Sulphate of ammonia	℥viij.
Boric acid	℥iij.
Borax	℥ij.
Water	Ov.

Dissolve.

Heat to 120° F. and impregnate the paper.

Flash-powder

Magnesium in powder alone or with an equal weight of powdered aluminium and 20 per cent. of potassium chlorate.

Freezing mixtures.

1. Ammonium nitrate, 1; sodium carbonate, 1; water, 1.

2. Ammonium chloride, 1; potassium nitrate, 1; water, 3.

3. Snow or ice, 5; common salt, 2; ammonium chloride, 1.

Gilding-powder

Gold chloride	℈j.
Potassium cyanide	ʒj.
Cream of tartar	gr. v.
Precipitated chalk	℈v.

Mix.

To be made into a paste with water and applied to the clean metal.

Gesso for Painters

Precipitated silica	℥iv.
Calcined borax	℥xij.
Litharge	℥xxiv.

Mix, fuse, powder, and levigate with water.

Grafting-wax

Yellow resin	℥viij.
Lard	℥iij.
Red ochre	℥iv.

Melt the resin, and while hot add the lard to it; then stir in the ochre, and pour the mixture on a stone slab.

II

Pitch	℥iv.
Resin	℥iv.
Lard	℥ij.
Beeswax	℥ij.

Melt together by a gentle heat.

White Gunpowder

Chlorate of potash	℥ij.
Ferrocyanide of potash (dried)	℥j.
Sugar	℥j.

Mix.

Hay-spice

Linseed-cake mea	lb. j.
Powdered fenugreek	lb. j.
Common salt	℥vj.
Powdered anise	℥iv.
Powdered ginger	℥iij.
Powdered coriander	℥iij.

Mix.

Herb Tobacco

Coltsfoot	8 lbs.
Eyebright	1 lb.
Thyme	1 lb.
Hyssop	1 lb.
Rosemary	1 lb.
Lavender-flowers	2 lbs.
Rose-petals	8 oz.

Mix.

Infants' Food

I

Cooked flour, dried and powdered	℥xij.
Sugar of milk	℥ij.
Dried malt-extract	℥j.
Bicarbonate of soda	ʒj.

Mix.

II

Biscuit-powder . .	2 lbs.
Sugar of milk . . .	3 oz.
Dried malt-extract . .	1 oz.

Mix well by sifting.

III

Dried malt-extract . .	℥xvj.
Condensed milk in powder . . .	℥viij.
Sugar of milk . . .	℥viij.

Mix.

Nos. I. and II. are of the Liebig type, and No. III. like Mellin's. No. I. is better than No. II. for a bottle-food.

Humanised Milk.

Frankland's process: Add to $\frac{3}{4}$ pint of new milk the cream removed from another $\frac{1}{3}$ pint, after standing twelve hours. Curdle the $\frac{1}{3}$ pint of skimmed milk by placing in it a square inch of rennet for five to fifteen minutes. Separate the whey, heat to boiling, remove the separated casein, and dissolve in the hot whey sugar of milk 110 gr., finally mixing with the cream-enriched portion. Clague's formula is as follows:—

New milk . . .	30 oz.
Cream	$1\frac{3}{4}$ oz.
Milk sugar . . .	$1\frac{1}{8}$ oz.
Water	18 oz

Dissolve.

Fill into bottles and sterilise by placing in cold water, bringing the water to the boil, allowing it to boil for half an hour, corking, and then boiling for another half-hour.

Insecticides

Board of Agriculture Remedies

1. The extract of 10 lbs. of quassia, obtained by boiling the quassia in 100 gals. of water, and 7 lbs. of soft soap.

2. The extract of 5 lbs. of quassia in 100 gals. of water, with 6 lbs. of soft soap and 4 pints of paraffin, well stirred.

3. The extract of 5 lbs. of quassia in 100 gals. of water, with 6 lbs. of soft soap and 4 pints of Calvert's carbolic acid No. 5.

4. 8 lbs. of soft soap and 2 lbs. of finely-ground hellebore, and a quart of paraffin, boiled and well stirred in 100 gals. of water.

5. Paris green or London purple 1 lb. to 150 gals. of water.

These are used with hand or machine syringes for small apple-trees, plum and damson trees, and for filbert and cob-nut trees.

Retailers who are consulted on this subject should get from the Board of Agriculture, Whitehall, London, S.W., a copy of the circular about 'Caterpillars on Fruit-trees,' which is posted free on application. The Board have also ordered a pamphlet to be published on the subject, which may be obtained from Messrs. Eyre & Spottiswoode, East Harding Street, London, E.C., post free for nine penny stamps. The following preparations are also most useful.

I

Bond's terebine . .	℥ij.
Spirit of tar . . .	℥ss.
Soft soap . . .	℥iv.
Methylated spirit . .	℥vj.

Dissolve.

Directions.—Half a teacupful of the solution to be added to a pailful of water, and the mixture used for syringing garden or greenhouse plants.

II

Nicotine . . .	5 drops
Water	1 gal.

Shake well.

To be used for syringing garden or greenhouse plants. This is excellent for rose-trees.

Insect-killing Bottle
(Cyanide Bottle)

Put into a wide-mouthed bottle of about 1 lb. capacity 1 oz. of potassium cyanide in pieces the size of a pea, cover the cyanide with plaster of Paris 2 oz. and pour on water 1½ oz. Allow to set hard.

Fertilisers or Garden-plant Foods

I

Sulphate of ammonia	1 lb.
Nitrate of potash	½ lb.
Sugar	¼ lb.

Mix.

Dissolve a teaspoonful in each gallon of the water used.

II

Sulphate of ammonia	2 lbs.
Nitrate of potash	1 lb.
Chalk	½ lb.
Chloride of sodium	½ lb.
Superphosphate of lime	½ lb.
Sulphate of iron	2 oz.

Mix well.

To be sprinkled freely on the mould used in transplanting.

Gelatine Capsules for Bottles

Soak 7 lbs. of good gelatine in 10 oz. of glycerine and 60 oz. of water, then heat over a water-bath until dissolved, and add any desired colour. Pigments may be used, and very beautiful tints can be obtained by the use of aniline colours. Store the jelly in jars.

Modus Operandi.—Liquefy the mass and dip the cork and portion of neck of bottle into the liquid; it sets very quickly.

This composition is particularly useful for capping benzine, liquid glue, glycerine jelly, and other little odds and ends which one wishes to make attractive on the shop counter, and it is at the same time a 'hermetical seal.'

Grease-proof Boxes

Paper, willow, or turned-wood boxes may be made impervious to air, water, or grease by immersing in hot melted hard paraffin. Another method recommended is to apply inside and out two coats of a varnish made of

Sandarac	2 oz.
White shellac	4 oz.
Spirit	10 oz.

Apply with a stiff brush.

Solution of silicate of soda and kaolin mixed together is used for painting on the inside of turned-wood boxes to make them grease-proof.

Glass-silvering Process

Dissolve 15 gr. of silver nitrate in 5 dr. of water, and add strong solution of ammonia until the precipitate which is at first formed is redissolved. Then add 15 gr. of caustic potash dissolved in 1 dr. of water; a precipitate is again formed, and ammonia solution is to be added until it almost dissolves. Then add a saturated solution of silver nitrate until the solution becomes of a straw-colour. Now place the glass to be silvered in a flat dish (such as a developing-dish), with supports which will raise it about ½ inch from the bottom. Pour water into the dish to completely cover the under-surface of the glass; remove the glass, pour some of the silver solution into the water, stir; then add some solution of pure dextrin, again stir, and replace the glass. A deposit of metallic silver is formed on the surface of the glass in about fifteen minutes.

Icing-powders

(For Wine-cooling)

No. 1

Sodæ carb. xtl.	12 oz.

No. 2

Ammon. chlor.	6 oz.

Dissolve No. 1 in 2 pints of water, and in ten minutes add No. 2.

LABEL-PASTES AND MUCILAGES

Dextrin Mucilage

I

Dextrin	℥xvj.
Thymol	gr. xv.
Water	℥xviiss.

Dissolve the thymol in a little spirit, mix with the dextrin and add the water. Heat on a water-bath until dissolved. Allow to settle, skim, and decant.

II

Dextrin	℥vj.
Dilute acetic acid	℥j.
Oil of cloves	gtt. x.
Glycerine	℥j.
Water to	℥xvj.

Mix the dextrin thoroughly with 6 oz. of cold water, add 8 oz. of boiling water; boil five minutes, stirring constantly; add hot water sufficient to make 14 oz. When cool add acetic acid, oil of cloves, and glycerine, the oil of cloves having been mixed with the glycerine beforehand.

III

Dextrin	℥iv.
Acetic acid	℥j.
Methylated spirit	℥j.
Water	℥v.

Mix the dextrin with the water and acid to form a smooth paste, then add the spirit.

IV

Dextrin	lb. iij.
Borax	℥vj.
Glucose	℥v.
Water	Oij. ℥ij.

Dissolve the borax in the water by warming, then add the dextrin and glucose, and continue to heat gently until dissolved. Strain through flannel.

The dextrin used for the foregoing should be the clear amber-coloured stuff or the white powder. The acid in Nos. II. and III. assists in making labels adhere well to tin, but No. IV. is as good for the purpose.

Solid Mucilage

Gelatine	℥ij.
Water	℥iv.

Macerate until soft, then add

Gum arabic	℥iij.
Gum tragacanth	℥ss.
Water	℥vj.
Glycerine	℥j.

Heat on a water-bath until dissolved, and a little of the mixture firms on cooling, then add 5 drops of oil of wintergreen, and pour on a slab. When cold cut into suitable-sized cakes.

Acacia Mucilage

The B.P. mucilage is rather thick. A more adhesive mucilage is made by dissolving 1 part of Ghatti gum in 2 parts of lime-water.

Tragacanth Paste

I

Powdered tragacanth	℥iij.
Powdered acacia	℥j.
Glycerine	ʒij.
Water	℥xxiv.
Perchloride of mercury	gr. xxiv.
Oil of cloves	ʒj.

Mix the gums with the water

and boil, then add the other ingredients, and mix well.

II

Tragacanth . . .	ʒj.
Ghatti gum . . .	℥iv.
Lime-water . . .	℥xvj.

Dissolve and strain; then add

Thymol, in fine powder .	gr. xiv.
Glycerine . . .	℥iv.

previously mixed, and make up to 32 oz. with water.

These are excellent adhesive agents, and the best pastes for mounting botanical specimens. No. I., with twice the amount of acacia and 2 pints of water, is used at Kew.

Flour Pastes

I. Remington's

Wheaten flour . .	℥iv.
Nitric acid . . .	ʒj.
Oil of cloves . . .	♏v.
Boric acid . . .	gr. x.
Water	℥xvj.

Mix the flour thoroughly with the boric acid and water, and strain through a sieve to avoid lumps; add the nitric acid, and heat with constant stirring until the mixture has thickened. When nearly cold add the oil of cloves and stir.

II

Flour	℥ij.
Powdered starch . .	℥ix.
Salicylic acid . . .	℥ss.
Water	℥xxxij.

Prepare as above.

III

(A)

Brown sugar . . .	lb. ij.
Boiling water . . .	℥xvj.

(B)

French gelatine . .	℥ss.
Water	℥iv.

(C)

Cornflour . . .	℥xij.
Cold water . . .	℥xij.

Beat up and pour the batter into

Boiling water . . .	℥xxxij.

Continue boiling C, if necessary, until the paste is translucent. Dissolve A and B separately, and then mix with C.

Flour paste is best for tinned surfaces. It should not be too thin, and the tin should be free from grease. New tin generally has an oily or greasy surface, due to the tallow or oil used in the plating process. The grease may be removed with an alkali or with benzene, but in a factory where much labelling is done it is better to slightly roughen the surface of the tin where the label is to be placed with a piece of fine sand-paper, or coat the tin with a solution of gelatine 1 part in 4 parts of acetic acid, and allow to dry before applying the pasted label. Another plan is to varnish the tin. It is necessary, in applying labels to metal and polished surfaces, to allow the paste to remain on for a minute or so, applying the labels like

DRAWER-LABELS

In that case the following is the way the thing is done. Paste eight labels or so, and apply the first one to the drawer. Rub smooth with a clean cloth. When dry apply a thin coating of the following solution with a flat camel-hair brush :—

Isinglass . . .	℥ss.
Water	℥x.

Dissolve and add

Rectified spirit . .	ʒvj.

When this coating is dry, apply in the same manner a coating of varnish. Gold labels are put on shop-rounds in this way also.

In making flour paste it will be noticed that it becomes stiff and adhesive after boiling for about ten minutes. If one stops at this point a poor product is obtained. The boiling should be continued for at least two hours with constant stirring, a little boiling water being added now and then to help the stirring. Alum, in the proportion of a teaspoonful to the pound of flour enhances the adhesive properties. Bill-stickers use caustic soda, ½ oz. to the pound of flour. Some of the popular stickfast pastes are made similarly; the boiling and stirring are the secret of success, but a little glycerine is also a necessary addition. The following formula is a good one:—

Wheaten flour	℥iv.
Water	℥xvj.
Carbolic acid	♏x.
Oil of cloves	♏x.
Glycerine	℥j.

Proceed as in making Remington's paste, but boil for two hours, replacing the evaporated water occasionally so that the product may weigh 20 oz.

Another good plan for making flour paste is to boil ½ oz. of alum in 8 oz. of water and add 1 oz. of wheaten flour and 4 oz. of water previously mixed. Stir well, and continue the heat until the paste becomes distinctly changed from a white to a clear appearance; then add 8 drops each of creosote and oil of cloves.

Many things have been recommended for making pastes and mucilages more adherent as regards metal surfaces; butter of antimony, honey, and aluminium sulphate are amongst the adjuncts highly spoken of. Their object is to keep the paste from drying absolutely, but they are not a complete success, and the factors already noted are more important.

For Preserving Mucilages and pastes use hydronaphthol, chinosol, or salicylic acid in the proportion of ½ gr. to 1 gr. per oz. Formalin ♏j. to the ounce is best of all.

The Paste-pot

Use an ordinary 3-lb. white glazed jar fitted with a tin lid, through the centre of which a hole is bored for the brush. About 1 inch from the top two holes are drilled opposite to each other (by a china-mender) and a piece of brass wire passed through these, which acts as a scraper for the brush. Such a pot is always clean and the paste in good condition.

A simpler plan is to tie string across the top of the jar, and chip a semicircle out of the lid to accommodate the brush.

The difficulty of keeping paste is met by making small quantities frequently, washing the brush and utensil each time of filling. Formalin keeps it for two months.

Syndetikon

Sugar	℥vj.
Water	℥xviij.

Dissolve by boiling, and add with constant stirring to the hot solution

Sifted slaked lime	℥iss.

Set aside for a few days to settle, and decant the clear solution. In it soak

Gelatine	℥vj.

for twenty-four hours, then heat on a water-bath until dissolved.

For Mounting Photographs

Nelson's No. 1 photo gelatine	℥iv.
Water	℥xvj.

Soak, dissolve on a water-bath, and add when somewhat cooled

Glycerine	℥j.
Methylated spirit	℥v.

Mix.

Moles, to Poison

Worms are dipped in a concentrated solution of strychnine in dilute sulphuric acid, and laid in the runs of the moles. This answers very well indeed.

The following pills get rid of moles very quickly when put into their holes :—

Ac. arsenic. . . .	gr. ss.
Pulv. acaciæ . . .	gr. ss.
Amyli	gr. ij.
Syrupi	q.s.

Ft. pilula.

Strychnine has a better effect than arsenic.

Oil for Clocks and Watches

Place a coil of clean lead in a white-glass bottle and fill with almond oil. Expose to the sun until all the curdy matter is deposited. Decant the clear oil, and to every 6 oz. of it add 1 oz. of the best cod-liver or seal oil.

Fox Oils

Ol. animalis and ol. succini, alone or mixed. Used for applying to sheep to ward off foxes.

Oil of Rhodium

(Factitious)

I

Oil of copaiba . .	℥j.
Oil of almonds . .	℥j.
Otto of rose . . .	♏x.
Oil of rose-geranium .	♏x.

Mix.

II

Oil of sandalwood . .	℥ss.
Oil of rose geranium .	♏xv.
Oil of almonds . .	℥iss.

Mix.

Oilskin

The oil used is a mixture of boiled linseed oil and 10 per cent. of its volume of gold-size or other drier. Calico receives three coats of the mixture, each coat being allowed to dry in the air for several days before the next is applied.

Oil for Surgical Instruments

Put a handful of small shot into a pint of liquid cocoa-nut oil, shake frequently in the course of a month, settle, and separate the clear part.

For use, saturate a piece of chamois-leather with the oil, and rub the steel parts of the instruments with it. Prevents rusting, but the instruments must be cleaned before use.

Paper Formulas

Copying-paper.—Make a paste with lampblack (or, for blue paper, powdered Prussian blue) and equal parts of castor oil and lard. Rub this well into soft unglazed paper for a few seconds, leaving a layer of paste upon the paper ; set aside for a day, and then rub off the superfluous paste.

Gummed Paper.—Printers use a mixture of gum arabic 8 parts and tragacanth 1 part, with water q.s.

Tracing-paper.—Select good unsized white paper. Place a quire of it on a flat surface and brush with a varnish composed of equal parts of Canada balsam and oil of turpentine. Hang up each sheet to dry. If to be used for ink, afterwards wash with ox-gall, and dry.

Waxed Tissue-paper is made by passing the paper through hot cylinders smeared with paraffin or Japan wax. Or a warm flat-iron is smeared with wax and applied to a pad of the paper, each sheet of which is then hung up by itself.

Pharaoh's Serpents

Sulphocyanide of mercury	ʒij.
Prussian blue . . .	gr. v.
Compound tragacanth powder . . .	gr. xv.

Mix well, mass with water and

divide into twenty-four pieces, form each into a small cone, and dry.

These are highly poisonous, but those made with nitre, bichromate of potash, and sugar are useless.

Pick-me-up

I

Spt. chloroformi	ʒss.
Spt. ammon. arom.	ʒss.
Tr. gentianæ co.	ʒj.
Tr. cardam. co.	ʒij.
Syrupi	ʒij.
Aq. ad	℥ij.

M. Pro dose.

II

Angelica-root	ʒiiss.
Gentian-root	℥j.
Orange-peel	℥ss.
Winter's bark	ʒj.
Cinnamon	ʒj.
Rectified spirit	℥xxxij.
Water	℥xlviij.

Make a tincture by maceration, and add

Glycerine	℥ij.
Tincture of lemon	℥j.
Tincture of saffron	ʒiss.
Tincture of capsicum	ʒiss.
Marsala	℥xij.
Malaga	℥xij.
Brandy	℥xxiv.

After standing six weeks filter.

III

Cascarilla	℥j.
Gentian-root	℥j.
Cardamom-seeds	℥ss.
Lemon-peel	℥ss.
Orange-peel	℥ss.
Ginger	℥ss.
Cinnamon	ʒij.
Cochineal	ʒij.
Aromatic spirit of ammonia	℥v.
Proof spirit	℥xv.

Reduce the drugs to No. 40 powder, and make a tincture by maceration for four days. Strain, press, and filter, and to the filtrate add

Spirit of chloroform	℥ij.
Sherry	℥v.
Syrup	℥x.
Water to make the whole	Oij.

Mix.

Dose: An ounce with as much water.

IV. For Headache

Caryoph.	ʒij.
Rad. valerian.	℥iv.
Cocci cacti	ʒj.
Liq. am. fort.	℥iss.
Spt. vin. rect.	℥xij.
Aq. destil.	℥xij.

Macerate for a week; then add

Ammon. brom.	℥iss.
Potass. brom.	℥iss.

Set aside for another week. Filter, and make up to 24 oz. with water.

Dose: ʒij. in water. Usually relieves headache in ten minutes.

V. Soberers

A

Acid. hydrocyanic. dil., B.P.	♏vj.
Spt. ammon. arom.	ʒij.
Aq. ad	℥ij.

M. Pro dose.

B

Acid. acetic. dil.	℥ss.
Aq.	℥ij.

Mix and add

Pulv. ammon. carb.	℈j

Drink while effervescing.

Potted Meats

The following formulas are curiosities which *The Chemist and Druggist* obtained from a pharmaceutical chemist who, while down in his luck, took an engagement with a potted-meat man.

The manufacture is very simple, and can be profitably worked on a very small scale. The meats may be put up either in tins, earthenware pots, or glass jars; the first involve most trouble, as they have to be soldered, and afterwards boiled to expel the air. A neatly-designed stock-label should be used for all the varieties made, each particular kind being specified by a small slip-label, as here shown.

THE YORKSHIRE
POTTED MEATS.

A pure wholesome, and nutritious relish. Warranted free from any injurious mixture.

Sole Manufacturer,
W. M. JONES,
High Street,
Ville.

POTTED HARE.

For the actual manufacture the apparatus required is a small mincing-machine and a pestle and mortar. The small maker will find it convenient to make the Australian tinned meats the basis of all the various kinds.

Potted Beef

Australian beef . .	7 lbs.
Ground rice . . .	1½ lb.
Powdered cayenne . .	q.s.
Powdered mace . .	q.s.

Mix all together roughly, then pass through mincing-machine; beat up in mortar, and pot.

Potted Hare

Australian beef . .	4 lbs.
Australian rabbit . .	3 lbs.
Ground rice . . .	2 lbs.
Powdered savoury herbs .	q.s.
Cloves	q.s.
Allspice	q.s.

Proceed as above.

Potted Ham

Australian beef . .	3 lbs
Boiled ham . . .	3 lbs.
Ground rice . . .	1½ lb.
Allspice	q.s.

Proceed as above.

Poultry Specialities

Egg-producing Spices

I

Sawdust	½ lb.
Red sanderswood . .	2 oz.
Fenugreek . . .	2 oz.
Capsicums . . .	2 oz.

Mix the powders.

II

Powdered liquorice . .	℥vj.
Powdered gentian . .	ʒj.
Powdered capsicum .	ʒj.
Powdered fenugreek .	ʒj.
Black antimony . .	ʒij.

Mix.

III

Powdered cayenne . .	ʒij.
Hardwood sawdust (fine)	℥iv.
Ground lentils . .	℥iv.
Fine oatmeal . . .	℥viij.

Mix.

IV

Powdered liquorice . .	℥vj.
Powdered gentian . .	ʒj.
Powdered capsicum .	ʒj.
Powdered fenugreek .	℥ij.

Mix.

General Directions.—One teaspoonful for eight to ten full-grown fowls, and chickens proportionally, to be given three to five times a week with the morning meal. These powders will also be found beneficial to young poultry, when wanted for the table, by giving them a keen appetite, and thus making them quickly plump. Should an overdose be given it will not injure the birds, but the stated quantity is best. They help the fowls to produce eggs in the coldest weather, and also when kept in confinement eggs are produced more abundantly.

Foods

I

Ground bones	4	oz.
Sulphate of iron	½	oz.
Powdered capsicum	½	oz.
Powdered fenugreek	2	oz.
Powdered black pepper	1	oz.
Sulphate of soda	1	oz.
Silver sand	2	oz.
Ground dog-biscuits	8	oz.

Mix.

II

Beef (lean, dried and ground)	20	oz.
Linseed cake	25	oz.
Indian corn	20	oz.
Indian corn (slightly browned with lard)	2	oz.
Ground oyster-shells	10	oz.
Chalk	6	oz.
Magnesia	2	oz.
Silver sand	2	oz.
Ground bones	3	oz.
Mustard bran	3	oz.
Capsicums	2	oz.
Common salt	2	oz.
Sulphate of iron	1	oz.
Carbonate of soda	1	oz.
Sulphur	1	oz.

Mix.

A heaped teaspoonful of either of these is to be mixed with the food for twenty fowls.

Roup-powder

Chlorate of potash	℥j.
Powdered cubebs	℥j.
Powdered anise	℥ss.
Powdered liquorice	℥iss.

Mix.

Directions.—Mix a teaspoonful of the powder with the food for twenty fowls.

NOTE.—For further information regarding the diseases of poultry see our 'Veterinary Counter-practice.'

Roach-paste

Mix with bread-paste carmine for red, and turmeric for yellow bait.

Sheep-dips

'Veterinary Counter-practice' should be referred to for further particulars regarding the sale and use of sheep-dips.

Arsenic-and-sulphur Dip

Arsenious acid	℥xij.
Dried sodium carbonate	℥xij.
Sulphur	℥iv.

Mix.

For a shilling packet, to make 30 gals. of dip for as many sheep. Yellow arsenious sulphide may be used instead of white arsenic.

Carbolic-and-glycerine Dip

Common size	1	lb.
Soft soap	1	lb.
Crude glycerine	1	lb.
Crude carbolic acid	1	lb.

Melt the size and soap together and add the other ingredients Mix well.

For 30 gals. of dip.

Tobacco Dip

Tobacco-juice	8	lbs.
Powdered hellebore	6	lbs.
Soft soap	4	lbs.
Arsenious acid	½	lb.

Mix.

Four pounds of this mixture treated with 30 gals. of water is sufficient for as many sheep.

Duty-free tobacco-juice is obtainable. It is a mixture of 100 lbs. dry tobacco-leaf in the form of juice, 10 lbs. sulphate of copper, 15 lbs. common salt, and 2 lbs. oil of turpentine.

Snuffs (Duty-free)

Tobacco manufacturers are allowed to supply the following free from duty:—

Blight-powder for Hops

Finely-powdered tobacco	75 parts
Sulphur	28 parts
Asafœtida . . .	5 parts
Sago-flour . . .	3 parts

Mix.

Hop-wash Liquid

Made by infusing 10 lbs. of extract of logwood with each 100 lbs. of dry tobacco.

Horticultural Fumigants

Snuff	100 lbs.
Powdered hellebore .	10 lbs.
Saltpetre . . .	18 lbs.
Asafœtida . . .	6 lbs.
Cayenne . . .	4 lbs.
Lampblack . . .	2 lbs.
Sago-flour . . .	10 lbs.

Mix.

Any of these may be used for making sheep-dip should the sulphate of copper, &c., in duty-free tobacco-juice be incompatible with other ingredients of the dip.

Soldering-fluid

Muriatic acid (commercial)	
Zinc . .	q.s. (to neutralise)
Sal ammoniac .	ʒj. to each ℥j.

Filter through a piece of lint or cotton-wool.

A little powdered resin sprinkled on the article (previously cleaned with emery cloth) to be soldered assists materially.

Soap-manufacture

This subject is too extensive for treatment in this book. Those who wish information should refer to any of the following works:—

'A Practical Treatise on the Manufacture of Soap and Candles.' By W. T. Brannt. Published by Sampson Low, Marston & Co. (Limited). 8vo. 35*s*.

'Soaps and Candles.' Edited by James Cameron. Published by J. & A. Churchill. Small 8vo. 7*s*.

'The Art of Soap-making.' By Alexander Watt. Published by Crosby Lockwood & Co. Crown 8vo. 9*s*.

'Handbuch der Praktischen Seifen-fabrikation.' Von Alwin Engelhardt. I. Band. Die in der Seifen-fabrikation angewendeten Rohmaterialien, Maschinen und Geräthschaften. II. Band. Die gesammte Seifen-fabrikation nach dem neuesten Standpunkte der Praxis und Wissenschaft. Published by H. Hartleben (Leipzig and Vienna). 6m. each volume (paper covers).

Resin-soap

Yellow resin . . .	ʒiij.
Caustic soda . . .	ʒv.
Water	Oj.

Boil for two hours, evaporate to dryness, and powder.

This soap is used as an emulsifying agent; *e.g.*:—

Resin-soap . . .	gr. x.
Water	℥j.
Fixed oil . . .	℥j.

Dissolve the soap in the water, and shake with the oil; or—

Resin soap . . .	gr. x.
Essential oil . . .	ʒij.
Water to . . .	℥iij.

Dissolve the soap in 1 oz. water, shake with the oil, and add the rest of the water with shaking.

The soap is also used in making such things as creolin, themselves clear solutions, but becoming perfect emulsions when a considerable volume of water is mixed with them.

Schlippe's Salt

Dissolve 74 parts of sodium carbonate in 250 parts of water by boiling; add a milk of 26 parts of lime and 85 parts of water, and, after five minutes' boiling, 36 parts of powdered black antimony and 7 parts of sublimed sulphur. Continue to boil until the grey colour disappears. Filter, and evaporate the filtrate to crystallisation-point. The crystals are Schlippe's salt, which is used in photography.

Table-jellies

Lemon

White sugar	16 lbs.
Glucose	8 lbs.
Gelatine	3½ lbs.
Water	2 qts.
Citric acid	1½ oz.
Oil of lemon	1 oz.
Salicylic acid	½ oz.
Orange colouring	a sufficiency

Soak the gelatine until soft in sufficient water to cover it. Boil the sugar and half the glucose in water to a temperature of 245° F.; remove the pan from the fire and gently stir in the remainder of the glucose, the gelatine, and the acid. Let the pan remain a short time, then skim off the top; next add the oil of lemon, previously mixed with 4 oz. of rectified spirit. Run the mixture into tins, and when cold cut to size.

Orange.—Oil of orange ½ oz., citric acid 1 oz., and orange-flower water 8 oz.

Raspberry.—The same proportions of acid, flavour, and colouring as for strawberry.

Strawberry.—Use ½ oz. citric acid, essence of strawberry 8 oz., and cochineal colouring a sufficiency.

Other essences may be used similarly.

Dust the squares with powdered glucose and rice-flour equal parts. To the dusting-powder 5 per cent. of boric acid may be added.

Tobacco Flavours or Perfumes

For Cut Tobacco

I

Valerian	℥ss.
Cascarilla	℥j.
Tonka bean	℥j.
Orris-root	℥ss.
Proof spirit	Oj.

Macerate for a week and filter.

II

Valerianic acid	♏x.
Heliotropin	℈j.
Essence of musk	℥ij.
Essence of apricot	℥vj.
Rum, 20 o.p.	℥xij.

Mix.

For Cigarettes

Calamus	℥ij.
Orris-root	℥vj.
Essence of white rose	ʒvj.
Mitcham oil of lavender	♏xx.
Oil of rose-geranium	♏40
Alcohol (70-per-cent.)	Oij.

Exhaust the powdered solids by percolation with the alcohol to 2 pints, and add the other ingredients.

Tobacco-paper for Fumigation

Nitre	℥j.
Tobacco-juice	Oj.

Dissolve. Dip unsized paper in the solution, and dry in a warm room.

Tattoo-marks (To Remove)

Apply nitric acid with the stopper of the bottle or a glass rod to cover the stain. In from a minute and a half to ten minutes, when the 'cutis vera' is penetrated and there is a crusted appearance, wash off with cold water. A few days after this treatment a scab forms, which contains the tattoo-mark or stain; remove it, and should inflammation supervene poultice and bathe with warm water. It may be noted that the scab begins to form on the second day, when the inflammation is subsiding. It is then advisable to cover with court-plaster until the scab forms completely, then poultice with boiled bread-and-milk until thoroughly clean, and dress with carbolic oil (1 in 20) or boric ointment. In this way the skin with the stain is not only removed almost painlessly, but at the same time the nitric acid to a certain extent seems to decolorise the stain.

Waxes

White, for Laundries

Bleached Carnauba wax .	1 lb.
White hard paraffin .	2 lbs.
White ceresine . .	4 lbs.

Melt together, and add a handful of fullers' earth; stir up, and strain through good flannel.

White, for Fly-hooks

Beeswax	℥j.
Resin	℥viij.

Melt, and simmer for ten minutes; then add

Tallow	℥j.

Pour into a basin of water and work it with the fingers until pliable, pulling it as a shoemaker pulls his 'wax,' and the longer the better. *Pennell's recipe* is:—Burgundy pitch 6, resin 3, tallow 1, prepared without water and pulling.

Bottle

Blue.—Common brown resin, 8 lbs.; melt and add 1½ oz. vermilion rubbed down with 1 oz. cotton-seed oil, and 2 oz. zinc-white and 8½ oz. ultramarine rubbed down with cotton-seed oil 10 oz.

Green.—Resin, 4 lbs.; tallow, 6½ oz.; Bremer blue, 2 oz.; ochre, 2 oz.; prepared chalk, 1 oz.; resin oil, 1 oz. Prepare as above, rubbing down the powders with the melted tallow and resin oil.

Red.—Resin, 4 lbs.; tallow, 1 lb.; vermilion (or red-lead), 6 oz.; resin oil, 3 oz. Prepare as above.

Yellow.—Resin, 10 lbs.; tallow, 1 lb.; chrome yellow, 10 oz.; prepared chalk, 2 oz.; resin oil, 5 oz. Prepare as above.

NOTE.—Tolu-syrup residues can be worked up as resin in making the above.

For the best quality carefully melt together in a clean copper pan

Shellac	3 lbs.
Venice turpentine . .	1¼ lb.

Then add

Vermilion . . .	1 lb.

For black wax use 1½ lb. of lampblack. A little Peru balsam is sometimes included, and camphor or spirit to increase readiness of burning.

Modelling

I

Beeswax, lead plaster, olive oil, and common resin, of each equal parts. Melt and stir in half the total weight of Armenian bole.

II

Hard paraffin, 10 oz.; Venice turpentine, 1 oz.; lard, 2 oz. Melt and stir in sifted kaolin 6 oz.

Weed-killers

I

Arsenious acid, 3 lbs.; common

spirit of salt, 1 gal.; water, 1 gal. Boil in an enamelled iron pan until dissolved, make up to 4 gals. with water, and colour with aniline blue 6 gr.

II

Arsenious acid, 4 lbs.; 70-per-cent. caustic soda, 4 lbs.; water, 4 gals. Boil until solution is effected, and colour with sulphate-of-copper solution.

III. Non-scheduled

Spirit of salt, 2 parts; water, 3 parts. Or sat. sol. of acid potassium sulphate.

Directions. - A pint to a pailful of water.

Wheat-dressings

(i.) Copper sulphate, 1 lb. (ii.) Copper and iron sulphates, of each ½ lb. (iii.) Corrosive sublimate, 3 dr. (iv.) Formalin, 1 oz. (v.) Soda crystals, ½ lb.; arsenic, 2 dr.

Directions in each case: Dissolve the material in 1½ gal. of water, and use to dress 6 bushels of wheat.

Worm Cake (Gingerbread)

Pulv. zingiberis . .	℥j.
Pulv. cassiæ . . .	℥ss.
Sodii bicarb. . . .	ʒj.
Hydrarg. subchlor. . .	℥ij.
Theriacæ . . .	℥viij.
Farinæ tritici ad . .	℥xx.

Mass and divide into 20-gr. cakes (each containing calomel 2 gr.), and bake.

Worms on Bowling-greens

Water with lime-water or solution of corrosive sublimate in spirit of salt 1 part and water 19 parts. Use a teacupful to a canful of water.

Photo Formulas.

Mercurial Intensifier

A

Mercuric chloride . .	½ oz.
Hydrochloric acid . .	45 min.
Water	10 oz.

B

Solution of ammonia .	1 oz.
Water to . . .	10 oz.

Immerse the negative in A till bleached, well wash, and tone in B till black throughout.

One-solution Intensifier

Uranium nitrate . .	ʒij.
Distilled water . .	Oj.

Dissolve.

Potassium ferricyanide .	℥ss.
Distilled water . .	Oj.

Dissolve.

Mix these two solutions and set aside for twenty-four hours; then filter and add glacial acetic acid ℥ss.

Directions.—Soak the negative in this till quite reddish-brown, rinse once or twice, and dry. Prolonged washing is unnecessary and disadvantageous.

Concentrated Toning-bath

Gold chloride . . .	gr. xv.
Ammonium sulphocyanide	gr. ccxxv.
Water to	℥iij. ʒvj.

Dissolve the gold chloride in 15 dr. of water, neutralise with a little chalk, and filter. Dissolve the ammon. sulphocyanide in 1½ oz. of water and add to the gold solution, and make up to 3 oz. 6 dr. Label 'Shake the bottle.' To make a toning-bath add 4 dr. to 15½ oz. water.

Combined Toning and Fixing Bath.

Sodium hyposulphite .	1¼ lb.
Citric acid . . .	½ oz.
Lead acetate . . .	½ oz.
Ammonium sulphocyanide	2 oz.
Water	80 oz.

Dissolve in the water (warm), in above order, filter bright, and add

Gold chloride . . .	12 gr.

GALENICAL AND MEDICINAL PREPARATIONS

Outside the British and other Pharmacopœias are many formulas for articles, some of which are ordered by physicians, and some are popular medicines. Besides these two classes are a large number of formulas for medicines which are novel, or which may never become official, and many which are not used by themselves as medicines, but as adjuvants or excipients. The object of this chapter is to bring these together. The formulas are arranged alphabetically, according to the Latin names of the principal groups—for example, aceta, misturæ, pilulæ, &c.—with certain exceptions which the index must cover. A few pharmacopœial but not B.P. preparations are included; also the principal formulas which have been compiled or devised by the American Pharmaceutical Association and the British Pharmaceutical Conference.

A.C.E. Anæsthetic Mixture

Absolute alcohol . .	℥j.
Chloroform . . .	℥ij.
Ether	℥iij.

Mix.

Acetum Camphoræ

Camphor . . .	ʒij.
Rectified spirit . .	℥iss.
Distilled wine-vinegar to .	℥xxv.

Dissolve the camphor in the spirit and shake with the vinegar; strain through absorbent cotton.

Acetum Camphoræ Fortius

Camphor . . .	℥j.
Rectified spirit . .	ʒj.
Glacial acetic acid . .	℥x.

Powder the camphor with the help of the spirit and dissolve it in the acid.

(An old pharmacopœial substitute for Henry's Aromatic Vinegar used for vinaigrettes.)

Acetum Carbolicum

Crystallised carbolic acid .	ʒx.
Camphor . . .	ʒj.
Rectified spirit . .	℥iss.
Dilute acetic acid . .	℥x.

Dissolve the camphor in the spirit and add to the acids previously mixed. Shake well.

Acetum Lobeliæ

Powdered lobelia-seeds .	℥iv.
Dilute acetic acid . .	℥xxxij.

Macerate for seven days, press, filter, and add to the filtrate 1 oz.

of rectified spirit, or dilute acetic acid to make 32 oz.

Acetum Sanguinariæ is made in the same manner.

Acetum Opii

(syn. *Black Drop*)

Powdered opium . .	ʒx.
Nutmeg in No. 30 powder	ʒiij.
Sugar	ʒxx.
Dilute acetic acid to .	℥xxv.

Macerate the opium and nutmeg in half the acid for seven days, strain, and press. Mix the marc with 5 oz. of the acid, strain, and press. Mix the liquors, filter, dissolve the sugar in the filtrate, and wash the filter with acid to make 25 fl. oz.

This is the generally recognised formula, and is taken from the U.S.P. A similar preparation is official in the German and French Pharmacopœias, but there is also used on the Continent a plain vinegar, made by macerating 1 part of opium in 6 parts of dilute acetic acid.

Acetum Rosæ

Dried rose-petals . .	℥iij.
Distilled wine-vinegar .	℥xviij.
Rectified spirit . .	℥iv.

Macerate for eight days and filter.

This form is a common continental one for making vinegars of various herbs, and may be followed in the case of Aceta Arnicæ, Belladonnæ, Digitalis, Rutæ, and Sabadillæ. Dilute acetic acid may be used in place of vinegar, although the odour is not so nice as that of true white-wine vinegar.

Acetum Staphisagriæ

Stavesacre-seeds, bruised .	℥iiss.
Dilute acetic acid . .	℥xx.

Macerate for eight days and filter.

Used in making lotions for pediculi.

Acidum Carbolicum Camphoratum

(*Carbolated Camphor*)

Acid. carbolic. xtl. . .	℥xij.
Camphor. . . .	℥iv.
Aquæ	℥j.

Rub together until liquid.

Acidum Carbolicum Iodatum

(*Iodophenol or Iodised Phenol*)

Various strengths are used. The (*a*) Continental and N.F. preparation is made by rubbing down 1 part of iodine with a mixture of crystallised carbolic acid 3 parts and glycerine 1 part; (*b*) for cauterising, a mixture of iodine 1 part and crystallised acid 4 parts is used; and (*c*) for making lotions, a solution of iodine ℈ij. in acid. carbolic. liq. ℥j.—1 dr. of this being diluted with a pint of water to make a vaginal injection.

Acidum Hydrobromicum (Fothergill)

Bromide of potassium	11 oz. 375 gr
Water . . .	2 pints

Dissolve.

Tartaric acid . .	14 oz. 212 gr.
Water . . .	2 pints

Dissolve.

Mix the solutions, shake well, and after standing all night filter.

The formula for acid. hydrobrom. dil. is that originally published in the *British Medical Journal* of July 8, 1876, by Dr. Fothergill, the quantities, however, being converted into avoirdupois terms exclusively to save probable error.

Dilute Hydriodic Acid is made in the same way (*see* Syr. acidi hydriod.). Acid. Hypophosph. Dil., U.S.P., is thus made: Dissolve 208 grammes of potass. hypophos. in 588 grammes of water, and separately 300 grammes of acid. tart. in 600 grammes of proof spirit; mix in a flask, cork, set aside twelve hours in a cool place; decant carefully through cotton-wool, weigh the filtrate, evaporate on a water-bath to get rid of the spirit, and when cold restore to the original weight by adding water. Sp. gr. 1·060 = 10 per cent. H_3PO_2. Acid. hypophos. B.P.C. is made by decomposing barium hypophosphite (8 oz.) with sulphuric acid (17 oz. dilute acid) in presence of water (36 oz.), filtering, washing with hot water, and evaporating the filtrate to 11½ oz. by weight. Sp. gr. 1·1367 = 30 per cent. H_3PO_2.

Acide Sulphonitrique Dilue.—Rabelais' formula is: Nitric acid 2 parts by weight, sulphuric acid 4 parts by weight. Add the sulphuric acid gradually to the nitric acid contained in a good glass flask kept cool on ice; mix well. To make the dilute acid add 6 parts of the above by weight to 300 parts of distilled water.

Æther. Camphoræ

Same strength as spt. camph. B.P., *i.e.* 1 in 10, made with ether.

Æther. Ozonicus

Sir B. W. Richardson, who introduced ozonic ether, directed it to be made by shaking together equal parts of 30-vol. hydrogen peroxide and pure ether, and decanting the ethereal layer for use. Martindale states ('Extra Pharmacopœia,' 1898, p. 258) that it is 'ether containing in solution peroxide of hydrogen of 30-volume strength, with some alcohol.' It may be made as follows:—Mix together in a large flask 1 part of barium peroxide and 50 parts of pure ether—both by weight—keeping the flask in ice or iced water; then add gradually a mixture of 2 parts of hydrochloric acid and 8 parts of water, still keeping the contents as near freezing-point as possible. Allow the action to proceed for an hour, and decant the ethereal liquid.

Æther. Phosphoratus

Made by macerating 1 part of phosphorus in small pieces in 50 parts, by weight, of pure ether for a month, and decanting. A French preparation—teinture éthérée de phosphore. Dose: Three to four drops.

Amyli Iodidum

Iodide of starch, or, properly iodised starch, was introduced by a Dr. Buchanan about fifty years ago, and was stated by him (*London Medical Gazette*, xviii. 515) to be made as follows:—

'Rub 24 grains of iodine with a little water, and gradually add one ounce of finely powdered starch; dry by a gentle heat, and preserve the powder in a well-stoppered bottle.'

The preparation is still occasionally required, and is given in doses beginning at half a teaspoonful. It is also, and chiefly, used externally. It was official in the U.S.P., 1880, being made by triturating 5 parts of iodine and a little water with 95 parts of starch, this formula producing practically the same thing.

A soluble form of the preparation is made by dissolving 5 parts of iodine in a mixture of 5 parts of ether and 10 parts of alcohol, triturating with 95 parts of powdered dextrin, and drying at a gentle heat. This is Amyli Iodidum Solubile.

AQUÆ AROMATICÆ

The preparation of aromatic waters by other methods than those recognised by the 'British Pharmacopœia' is so common in the trade that some reference to the various processes in use may be made. Perhaps the oldest and commonest plan is that represented by the following two formulas:—

Aqua Carui

Ol. carui	ʒss.
Spt. rectificat.	℥ss.
Mag. carb. levis	q.s.
Aq. ad	Oij.

Dissolve the oil in the spirit, pour upon about half an ounce of the magnesia in a mortar, stir, gradually add the water, and filter.

Aqua Menthæ Piperitæ

Ol. menth. pip.	ʒiss.
Mag. carb. levis	℥j.
Aq. destillatæ	Cong. j.

Triturate the oil with the magnesia and gradually add the water. Shake well for ten minutes, and filter.

The waters so produced are contaminated with magnesium carbonate, and when dispensed with certain substances the appearance of the preparations is not what it would be with strictly B.P. waters. Calcium phosphate is not so objectionable, yet it partly dissolves. Talc and fullers' earth, carefully purified by washing with hydrochloric acid and water and drying, are better, while asbestos, kaolin, and kieselguhr have advantages over other substances. Cotton-wool and paper pulp have also been proposed as substitutes for the magnesia. It should be noted that all these substances help to make clear waters because they divide the oil, so assisting solution, and absorb and keep back part of the oil. It may be taken as approximately near the truth that water will dissolve essential oil in the proportion of 1 to 500; but the 'British Pharmacopœia' requires only 1 in about 850 for aq. menth. pip., and such a formula as that given above almost meets the pharmacopœial requirement as to strength. The magnesia is the chief objection. In the case of aq. carui the presence of spirit is an additional objection, for experience shows that it is slowly oxidised, acetic acid and aldehyde being formed, both of which sensibly modify the aroma of the water. To get rid of these objections aromatic waters may be made extemporaneously from the oils by shaking a drachm of the oil with half a gallon of hot water in a Winchester quart bottle and setting aside until cold, when the clear water should be decanted.

Concentrated Waters, so called, are solutions of the essential oils in weak spirit. The objection to spirit, already referred to, applies in this case also ; but there is no question of the great convenience of concentrated waters in pharmacy, and they are used most extensively. The following two formulas are the best which have been published. They are both for Aq. Menth. Pip. Conc. (1 in 40) :—

I

Ol. menth. pip. . .	♏100
Mag. carb. lev. . .	ʒij.
Spt. rectificat. . .	℥iij.
Aq.	℥j.

Dissolve the oil of peppermint in 2 oz. of rectified spirit, and pour into a mortar containing the mixed magnesia and water ; transfer to a bottle, wash out the mortar with the rest of the spirit, add it to the bottle, shake occasionally for several hours, and filter.

II

Ol. menth. pip. . .	℥ss.
Alcohol. . . .	ʒj.
Spt. rectificat. . .	℥iv.
Aq.	℥iv.

Dissolve the oil in the alcohol, add the spirit and a drachm of kieselguhr, shake well, add the water, set aside for three days, shaking occasionally ; filter, and make up to 8 oz. with proof spirit.

The first of these contains 1 of oil in 20, the second 1 in 16 ; the former makes a clear solution approximating to the pharmacopœial strength, and the second gives a cloudy water : the formula is not good, but the *modus operandi* is excellent. It may, however, be noted that commercial concentrated waters are rarely so strong as are provided for by these formulas ; seldom do they contain as much as 2 per cent. of the essential oil, and we know one which contains less than 0·5 per cent.

yet it yields a pleasant peppermint-water. The following are directions which may be relied upon :—

Aqua Anethi Conc.

Ol. anethi . . .	♏100
Aq. fervid. . . .	℥vj.
Spt. rectificat. ad . .	℥xviij.

Dissolve the oil in 10 oz. of the spirit, and add the hot water. Shake well and set aside for a day or two. Decant, and filter through 2 dr. of kaolin; then make up the filtrate with spirit to 18 oz.

Aqua Menthæ Pip. Conc.

Ol. menthæ pip. . .	℥ss.
Aq. fervid. . . .	℥viij.
Spt. rectificat. ad . .	℥xx.

Dissolve the oil in 10 oz. of the spirit, add the water, and proceed as in making aq. anethi conc., adding, after filtration, sufficient rectified spirit to bring up the volume to 1 pint.

In the same way as aq. anethi conc., the corresponding preparations of anise, cloves, caraway, cinnamon, and fennel may be made. Cassia, pimento, rose, and spearmint should be made like aq. menth. pip. conc. In making aq. rosæ conc. omit a drachm of the otto and replace it with ol. ros. geran. ʒss., which rounds off the aroma better. The addition of 5 drops of oil of cloves to each drachm of otto of rose used produces an aroma closely resembling that of the water distilled from rose-petals.

Aqua Camphoræ may be quickly prepared by adding spt. camph. ʒiij. to a 40-oz. bottleful of distilled water and shaking briskly.

Aqua Opii

The distillate from a mixture of 1 part of opium with 5 parts of water.

Aquæ Phagedænicæ

Lotiones hydrarg. flav. et nig. B.P.

Aqua Picis, vel Eau de Goudron

Tar	ʒv.
Powdered pumice . .	ʒxv.

Mix and shake for five minutes with

Water	Oiiss.

Filter.

Anodyne Balsam

In the seventeenth and eighteenth centuries anodyne or Guido's Balsam was made by distilling equal parts of Venice turpentine and tacamahaca, or balm of Gilead resin, and using the red oil which collected in the receiver. This gradually gave place to a soap and opium liniment—substantially the lin. opii of to-day—the following being a recipe followed earlier in the present century :—

Gum. opii . . .	℥j.
Sapon. alb. hispan. . .	℥iv.
Spt. vini rectif. . .	℔ij.

Digest three days, filter, and add

Camphor. . . .	℥ij.
Ol. rorismarin. . .	℥ss.

Agitate diligently.

Aqua Carminativa

(*For the Relief of Flatulence in Children*)

I

Potass. bicarb.	ʒj.
Syrupi	℥ij.
Aquæ carui	℥ij.
Aq. anethi ad	℥viij.

Mix.

Dose: A teaspoonful to be mixed with two tablespoonfuls of warm water and sipped.

II

Ol. chamomillæ	♏iij.
Ol. carui	♏iv.
Ol. coriandri	♏iv.
Ol. limonis	♏iij.
Ol. menth. pip.	♏v.
Spt. rectificat.	℥iss.
Glycerini	℥ij.
Aq. fervid. ad	℥xvj.

Dissolve the oils in the spirit, and shake up with the glycerine and 12 oz. of warm water. Allow to stand for a day, and filter through a wet filter sprinkled with fullers' earth; wash the filter with cold water to 16 oz.

Arnica Opodeldoc

Tr. opii	ʒj.
Tr. arnicæ	ʒij.
Lin. saponis ad	℥iss.

M.

Baume de Fioraventi

Bruised cinnamon, cloves, nutmeg, and ginger, of each	ʒj.
Myrrh, galbanum, and storax, of each	ʒij.
Laurel berries	ʒiij.
Soft gum thus	ʒiv.
Rectified spirit	℥xv.
Water	℥xlij.

Macerate for a day and distil 16 oz.

Balsam of Horehound and Aniseed

Paregoric elixir	℥ij.
Tincture of senega	℥ss.
Spirit of chloroform	℥ss.

Mix, and in the mixture dissolve

Oil of peppermint	♏x.
Oil of anise	♏xx.

Then add

Liquid ext. of horehound	℥ss.
Liquid ext. of liquorice	℥iij.

Shake well. Heat the following together:—

Treacle (weight)	℥v.
Water	℥ij.

And add

Syrup of squill	℥iij.

Gradual mix with the spirituous solution, and make up to ℥xx. with syrup of tolu and water.

Dose: For adults a teaspoonful three times a day.

Baume de Commandeur

(*The original Recipe*)

Dry Peruvian balsam	℥j.
Storax in tears	℥ij.
Benzoin	℥iij.
Socotrine aloes	℥ss.
Myrrh	℥ss.
Olibanum	℥ss.
Angelica root	℥ss.
Flowers of St. John's wort	℥ss.
Rectified spirit (by weight)	℥xxxij.

'Let them stand in the sun during the dog days in a glass vessel closely stopt, and afterwards strain out the balsam through a linen cloth'—*i.e.* macerate for eight days and filter. Tr. benzoin. co. is now given for this.

Riga Balsam

Chamomile and lavender flowers, wormwood, sweet marjoram, marjoram, spearmint, rosemary, sage, lovage, tansy, serpyllum, and summer savory herbs, calamus, and angelica roots, and juniper berries, of each ℥ij., are macerated in 32 pints of rectified spirit overnight, and next day 20 pints of the liquor distilled. This clear liquor is sold as it is, also one coloured brown with aloes and benzoin. Hence tr. benzoin. co. is commonly sold as 'Riga balsam' for wounds, but the true balsam is an antispasmodic and carminative.

Balsamum Nervinum

Two preparations go by this name, an ointment and a tincture (Tr. Succini Aromat.).

I

Beef marrow . . .	℥iv.
Oil of mace . . .	℥iv.

Melt together, and add a tincture of

Tolu balsam . . .	ʒij.
Oil of cloves . . .	ʒj.
Camphor . . .	ʒj.
Rectified spirit . .	℥ss.

Mix thoroughly.

II

Oil of cloves . . .	♏xv.
Oil of cinnamon . .	♏xv.
Oil of lavender . .	♏xv.
Essential oil of mace .	♏xv.
Tincture of amber (1 in 6 of spirit of ether) . .	℥iv.

Mix.

Dose: 5 to 10 drops for hysteria, or to be used externally as an embrocation.

Balsamum Locatelli

(*Locatelli's or Luctuary Balsam*)

(The original Recipe)

Olive oil . . .	℥xvj.
Strasburg turpentine .	℥vj.
Yellow wax . . .	℥vj.
Red sanderswood . .	ʒvj.

Melt the wax over a gentle fire with part of the oil, then add the rest of the oil and the turpentine; afterwards mix in the sanders, and keep them stirred together until the mixture is cold.

(A modern Recipe)

Ol. olivæ . . .	℥xvj.
Tereb. venet. . . .	℥viij.
Rass. santal. rub. . .	ʒvj.

Prepare as above.

It is used for coughs with an equal quantity of conf. rosæ. The old Edinburgh formula contained Peruvian balsam, and was coloured with dragon's-blood, which gave it a better colour than the red sanderswood. Chian turpentine could be used alternatively for the Strasburg variety.

Balsam Pectoral

Communicated by Mr. Robert White to the *Pharmaceutical Journal* in 1843 as being similar to Powell's balsam.

Rad. ipecac. contus. .	℥iss.
Flor. benzoin. . .	℥ss.
Opii crudi . . .	℥ss.
Ol. anisi . . .	ʒiij.
Spt. vini rectificat. . .	Oij.
Aquæ destill. . . .	Oj.

Macerate for fourteen days, and add

Ext. glycyrrhizæ . .	℥vj.
Potass. carbonat. . .	℥iv.

Dissolved in a pint of water, and add

Tr. digitalis . . .	℥vij.

Balsam. Sulphuris

(*Ol. Sulphuratum*)

Sublimed sulphur . .	℥ij.
Olive oil . . .	Oj.

Heat the oil in a large iron vessel, and add the sulphur gradually until they are united.

Bals. Sulphur. Anisatum

One part of anise oil mixed with 5 parts of the last article.

Balsamum Traumaticum

(syn. *Vulnerary Balsam*, *Friar's Balsam*, *Turlington's Balsam*, *&c.*) is tr. benzoin. co., B.P. The original preparation was, however, Baume de Commandeur (*q.v.*), and the 'National Formulary' still gives a formula closely resembling it, viz. :—

Benzoin . . .	1½	troy oz.
Storax . . .	½	,,
Balsam of tolu . .	½	,,
Balsam of Peru .	120	grains
Aloes . . .	60	,,
Myrrh . . .	60	,,
Angelica root . .	30	,,
Rectified spirit .	16	oz.

Macerate ten days with agitation, and filter.

Balsamum Vitæ Aromaticum

Bals. nervinum (*q.v.*) is the simple modern form of an old preparation which was made as follows :—

Oils of lavender, nutmeg, cloves, rhodium, and serpyllum, of each .	ʒss.
Oils of cinnamon, lemon, and bergamot, of each .	℈ij.
Balsam of Peru . .	ʒj.
Spirit of lavender . .	℥xv.

First dissolve the balsam in the spirit, then add the oils, and digest till the whole is dissolved.

Baume de Vie

Dec. aloes co., B.P.

Bassorin

Under this name, which is properly applied to the insoluble part of tragacanth, there was introduced from the Continent a few years ago an ointment basis made by mixing 1 part of powdered tragacanth with spirit to wet it, then adding 50 parts of glycerine (by weight) and heating until clear. Martindale quotes the following formula : Tragacanth 5, glycerine 2, rectified spirit 10, water to 100. In the spirit contained in a wide-mouthed bottle diffuse the tragacanth and add the water, then add quickly the glycerine, diluted with as much water, and shake well.

Bate's Alum Water

(*Liq. Aluminis Co.*, *P.L.*)

Alum and sulphate of zinc, of each 1 oz., dissolved in 48 oz. of boiling water.

Boroglyceride

This is the subject of an English patent. The 'National Formulary' directs boroglycerinum to be made by heating together 62 parts of powdered boric acid and 92 parts (by weight) of glycerine until the weight is reduced to 100 parts. The glycerine must be heated to 150° C. before the acid is added. When cold cut the mass into pieces and preserve in a bottle. This is substantially the patented article (*see also* Glycerines).

Borosalicylate

A mixture of two molecular proportions (678) of sodium salicylate and four molecular proportions (248) of boric acid rubbed together, dried, and powdered. With this is made

Borosalicyl Cream

Borosalicylate. . .	ʒv.
Arnica glycerine[1] . .	℥j.
Lanoline . . .	ʒivss.
Vaseline . . .	ʒvss.

Mix thoroughly and perfume.

This is an excellent application for chilblains.

---

[1] Made by macerating 1 oz. of arnica flowers in 8 oz. of glycerine for eight days and straining.

Bromidia

I

The B.P.C. Formulary gives a formula to imitate this well-known American preparation, calling it *Liquor Bromo-chloral Compositus.*

Chloral hydrate .	1,600 grains
Tincture of Indian hemp . .	400 minims
Tincture of fresh orange-peel .	400 ,,
Henbane juice .	1,600 ,,
Syrup . . .	3¾ oz.
Liquid extract of liquorice . .	½ ,,

Dissolve. Add

Potassium bromide	1,600 grains
Distilled water .	7 oz.

Filter, and make up the filtrate to 20 oz. with distilled water.

Dose : ʒss. to ʒij.

II

The N.F. formula differs from the above in containing extract of henbane and tincture of quillaia ; the juice is better than extract, and this idea originated with Bailey, who gives the following :—

Hydrate of chloral .	80 grains
Bromide of potassium	120 grains
Henbane juice .	80 minims
Tincture of Indian hemp . . .	80 minims
Glycerine . .	1 ounce
Cinnamon-water to .	8 ounces

Mix.

Dose : 1 ounce.

III

Another imitation is that of the Edinburgh Infirmary, viz :—

Bromide of potassium .	ʒvj.
Chloral hydrate . .	ʒvj.
Tincture of hyoscyamus .	ʒiij.
Tincture of cannabis indica	ʒiss.
Lemon syrup . . .	℥iij.
Distilled water to . .	℥vj.

Dissolve and mix. Shake up with kaolin, and filter through paper.

Dose : ʒij.

Each fluid drachm of genuine bromidia is stated to contain 15 gr. each of chloral hydrate and potassium bromide, and ⅛ gr. each of extracts of cannabis and henbane.

The above formulas are sufficiently varied, but that is a way with imitations. In regard to this matter Mr. J. F. Brown writes (*C. & D.*, L., p. 31) :—'The variations upon the original formula seem to be quite unnecessary. Premising knowledge of the solvent powers of chloral hydrate over resinous substances, no competent chemist would find any difficulty in compounding the preparation from the data furnished by its makers. Rubbed down in a porcelain dish with the required quantity of solution of chloral hydrate (1 in 1) the extract of cannabis readily dissolves ; then add the extract of henbane and rub it down ; then the powdered bromide, with a little more than twice its weight of water ; dissolve and make up to the exact volume.'

Brust Thee

(*Breast Tea, Species Pectoralis, P.G.*)

Rad. althææ . . .	℥xij.
Rad. glycyrrhiz. . .	℥ivss.
Rad. iridis flor. . .	℥iss.
Fol. farfaræ . . .	℥vj.
Flor. verbasci . . .	℥iij.
Sem. anisi . . .	℥iij.

Cut or bruise the ingredients, as the case may be, mix well, and put up in 2-oz. packets for making a winebottleful of infusion, to be used as a cough-mixture.

Buginaria

(Urethral Bougies)

The following are made with cocoa-butter or gelatine basis.

Belladonna extract (alcoholic)	1 gr.
Belladonna extract in combinations	$\frac{1}{4}$ to 1 gr.
Cocaine	$\frac{1}{2}$ gr.
Iodoform	5 gr.
Iodoform and eucalyptus oil [1]	5 gr. and 10 mins.
Iodoform and morphine acet.	5 and $\frac{1}{2}$ gr.
Lead acetate	$\frac{1}{2}$ to 1 gr.
Zinc chloride	$\frac{1}{4}$ to 1 gr.
Zinc sulphate	$\frac{1}{2}$ to 1 gr.
Zinc sulphocarbolate	$\frac{1}{2}$ to 1 gr.

Calamina Artifacta

(W. Lyon)

Sulphate of zinc	861 parts
Strong solution of perchloride of iron	15 fl. parts
Carbonate of sodium	890 parts

Dissolve the sulphate in water and add the iron solution. Dissolve the carbonate in water, mix the solutions, shake well, and collect the precipitate on a calico filter. Wash until free from sulphate, drain well, and heat in a crucible until a portion of the powder ceases to effervesce on addition of an acid. Cool, and grind to an impalpable powder.

Yields a nice flesh-coloured powder of constant composition.

Camphoid

(Martindale)

Mix equal parts by weight of camphor and absolute alcohol, and when solution is complete dissolve in each 40 fluid parts of the solution 1 part of pyroxylin.

Used as a substitute for collodion to form a vehicle for such drugs as iodoform, salicylic acid, resorcin, chrysarobin, &c. 'The preparation dries in a few minutes, leaving an opaque film, which is not easily washed off.'

Carruther's Electuary

Pulv. potass. bitart.	ʒvj.
Pulv. jalapæ	ʒij.
Sulphur. sublim.	℥iss.
Conf. sennæ	℥iij.
Syr.	q.s.

ut fiat electuarium

Dose: A teaspoonful, more or less as a laxative, for those suffering from piles.

CARBASI ANTISEPTICI, OR ANTISEPTIC GAUZES

The following formulas for making antiseptic gauzes are typical of the methods followed, with certain modifications, by manufacturers. Obviously the retailer should not undertake to make such articles except in cases of emergency, as when volatile and inflammable solvents are used the danger of working in ordinary premises is considerable. Moreover, the expense of the processes, when the solvents cannot be recovered, is prohibitive of general manufacture. The iodoform and salicylic acid formulas are, on the whole, the best for extemporaneous preparation of the gauzes, and are well suited for salol, creolin, thymol, aristol, resorcin, and other antiseptics soluble in ether or spirit. When the antiseptic is volatile it should be combined with resin and oil, as in the salicylic-acid gauze.

---

[1] This is Mr. Watson Cheyne's bougie.

The best gauze to use is one having about thirty threads to the linear inch, and weighing 10 dr. per square yard. An easy way to saturate, say, 2 yards of gauze is to hang the fabric over a string and spray the required volume of antiseptic solution uniformly over it at each side, turning once or twice until the whole of the solution has been used. Or the gauze may be folded and put into a deep photographic developing dish, containing the solution, and turned to equally absorb the antiseptic, then taken out, unfolded, shaken, and dried.

Alembroth, 1 per cent.

Sal alembroth . .	ʒj.
Methyl blue . . .	q.s.
Glycerine . . .	ʒij.
Distilled water . .	℥xij.

Dissolve, and in the solution steep 10 oz. of gauze, press out to weigh 21 oz., and dry.

Boric Acid, 10 per cent.

Boric acid . . .	ʒix.
Boiling water . . .	℥xiij.

Dissolve, and to the solution add

Cotton gauze . . .	℥x.

Allow the solution to be equally soaked in, and when that is done press until the gauze weighs 15 oz., then dry.

Benzoic Acid, 4 per cent.

Benzoic acid . . .	ʒv.
Castor oil . . .	ʒij.
Rectified spirit . .	℥xiij.

Dissolve, and saturate 10 oz. of gauze in the solution. Press to a weight of 20 oz., and dry.

Carbolic Acid

Lister directed it to be made by medicating gauze with half its weight of a mixture of carbolic acid 1 part, and resin and paraffin of each 4 parts. This gives rather an unpliable product, but the mixture is improved by the addition of 2 parts of vaseline oil.

Iodoform

Iodoform . . .	℥j.
Methylated ether . .	℥x.
Rectified spirit . .	℥viij.

Dissolve the iodoform in the ether and spirit, add glycerine ʒij., mix, and saturate 10 oz. of gauze in the mixture, which dry.

This gives a 10-per-cent. gauze; for a 20-per-cent. use iodoform ℥ij., ether ℥xx., castor oil ʒj., and no spirit.

Salicylic Acid

Petroleum ether (s.g. 0·690–0·700)	Oiiss.
Methylated ether . .	℥v.
Vaseline oil . . .	℥ss.
Elemi	ʒiss.
Salicylic acid . . .	℥ij.

Make a solution. This is sufficient to saturate its own weight of gauze to give approximately a 5-per-cent. gauze.

Eucalyptus

(*Lister's* 4-*per-cent.*)

Eucalyptus oil	℥iss.
Dammar resin	℥iij.
Paraffin	℥ivss.

Melt the solids by heating at a temperature of 50° to 60° C. for two hours, add the eucalyptus oil, then saturate 12½ oz. of gauze with the mixture by passing it through warm plates or cylinders smeared with the composition.

Ceratum Citrinum

(*Yellow Cerate, P.L.*)

Resin ointment	℥vj.
Yellow wax	℥j.

Melt together.

'Citrine ointment' nowadays is ung. hydrarg. nit. mitius; but how often do people really mean the above when they ask for citrine ointment?

Ceratum Cretæ Compositum

Emp. plumbi	℥vij.
Ol. olivæ	℥iv.
Cretæ preparatæ	℥iv.
Aceti destillati	℥iv.
Liq. plumbi subacet.	℥ss.

Melt the oil and the plaster together. Rub down the chalk with the vinegar, and liquor, previously mixed, and add the melted basis with diligent stirring, maintaining the heat to ensure perfect mixing.

Ceratum Epuloticum

Epulotic or Turner's cerate is now ung. calaminæ B.P., but the latter is not so strong, and has a different basis. The original was

Calaminæ	℥viij.
Ceræ flavæ	℥viij.
Ol. olivæ	℥xvj.

Ft. ung.

Indian Cerate.—The evolution of this popular ointment will be apparent when the formula for ceratum cretæ co. is compared with the following four formulas. The chalk cerate is from the old 'Manchester Pharmacopœia,' and is probably an improvement upon the original A, while B is a simpler form of cerat. cretæ co.; and since 'cutting' came in, we are getting down to simpler forms still, as notice C and D, which are articles to sell in penny boxes. Cerate A retails at 1*d.* a drachm, or 4*d.* per oz., without recommendation. With label to the effect that it is 'the celebrated Indian cerate for healing burns, wounds, cuts, slight skin affections, &c.,' it is put up in 3-oz. pots, stamped, to retail at 1*s.* 1½*d.*

A. The following is claimed to be the original recipe:—

First Stage.—Rub up in a large warmed mortar ʒij. of Peruvian balsam with ℥ij. of olive oil.

Second Stage.—Melt 1 lb. of white wax in 78 oz. of olive oil, by the aid of heat, and mix with the Peruvian balsam and oil.

Third Stage.—Make 15 oz. of levigated carbonate of lead into a thin paste with distilled water, and mix well with the above ointment while hot, stirring constantly till nearly cold.

B. In Lancashire and the Potteries an ointment made as follows is largely sold :—

White wax . . .	℥viij.
Olive oil	℥xl.

Melt and dissolve in the mixture

Camphor . . .	ʒj.

Then gradually add to the following, previously made into a paste with water :—

Sugar of lead . . .	ʒij.
Precipitated chalk . .	℥viij.

C. A third cerate, 'for burns, scalds, chapped hands, sore eyes, &c.,' is sold in the Ashton-under-Lyne district :—

Zinci oxidi . . .	ʒij.
Ceræ japonicæ . .	℥iss.
Adipis	℥iv.

M. S. A.

D. Cocoa-nut oil, hardened with Japan wax, is also sold under this name.

Cerate, Marshall's
(Dr. Paris)

Palm oil	℥v.
Calomel	℥j.
Lead acetate . . .	℥ss.
Citrine ointment . .	℥ij.

Mix.

Cerate, Dr. Pearson's

Empl. plumbi . . .	℥iv.
Ceræ flavæ . . .	℥j.
Ol. amygdalæ . . .	℥iij.

Melt together and stir until cool.

Cerate, Pott's

Pulv. litharg. . . .	℥xvj.
Sapon. castil. . . .	℥ij.
Aceti destillati . .	℥xxxij.

Dissolve the soap in the vinegar, add the litharge, and evaporate to dryness ; then mix in the following, previously melted :—

Ceræ flavæ . . .	℥x.
Ol. olivæ . . .	℥xvj.

Make a smooth cerate.

Ceratum Saponis, U.S. 1870

Soap plaster . . .	℥ij.
Yellow wax . . .	℥iiss.
Olive oil (by weight) .	℥iv.

Melt the plaster and wax together, add the oil, and, after continuing the heat for a few seconds, stir the mixture until cool.

Charta Nitrata
(*Nitrated or Nitre Paper*)

Make a solution of potassium nitrate of from 30 gr. to 1 dr. to each ounce of water, and through the solution contained in a flat plate draw pieces of white blotting-paper, which dry.

German Antiasthmatic Paper

Potassii nitrat. . .	℥ij.
Ext. stramon. . . .	ʒx.
Sacch. alb. . . .	℥iiss.
Aq. bullient. . . .	℥xiiss.

Dissolve the solids in the water, strain the solution, and saturate white blotting-paper with it. Dry the paper, and cut up into suitable pieces.

French Antiasthmatic Paper

Potass. nitrat. . . .	℥vj.
Pulv. bellad. fol. . .	℥ss.
Pulv. digital. fol. . .	℥ss.
Pulv. stramon. fol. . .	℥ss.
Pulv. lobel. inflat. . .	℥ss.
Pulv. phelland. . .	℥ss.
Pulv. myrrhæ . . .	℥j.
Pulv. olibani . . .	℥j.

Mix these powders and incorporate with 12 oz. of unsized paper soaked in water. When thoroughly pulped, spread out into thin layers, calender, and dry.

Chelsea Pensioner, sometimes called 'confectio guaiaci composita' and 'confectio sulphuris et guaiaci composita,' is a celebrated preparation for rheumatism and gout, the origin of which is sufficiently obscure to make it interesting.

Some say Lord Amherst, others Lord Anson, got the prescription from an old soldier in Chelsea Hospital, paying him for it 300*l.* or 500*l.* and an annuity of 30*l.* We have made diligent inquiry as to the truth of these statements, the result being that it is highly improbable that Lord Anson (his descendant is the Earl of Lichfield) ever had anything to do with it; but probably Jeffrey, the first Baron Amherst, a commander-in-chief of the British army in North America, who died in 1797, may have got it from the pensioner. Be that as it may, the original prescription has grown into dozens of variations since 1821, when it first seems to have appeared in medical or pharmaceutical text-books. We subjoin two formulas :—

The Original

Pulv. guaiaei . . .	ʒj.
Pulv. rhei . . .	ʒij.
Potass. bitartratis . .	℥j.
Sulphur. . . .	℥ij.
Nucis myristicæ . .	No. 1.

Mel. lb. j. [℥xij.] vel q.s. ut fiat electuarium.

A Common Modification

Pulv. rhei . . .	ʒij.
Pulv. guaiaei . . .	℥ss.
Pulv. potass. nit. . .	℥j.
Sulphur. sublim. . .	℥j.
Pulv. sinapis . . .	℥j.
Mel.	q.s.

M. Fiat elect.

Dose: 1 to 2 teaspoonfuls ['tablespoonfuls' is given by some authorities] night and morning. A glass of hot rum and water after going to bed; if much fever, white wine and water hot.

Our inquiry elicited the fact that some writer had changed

Ingredients	Squire	Cooley	Remington	Whitla	Martindale and Lond. Hosp.	Edin. R. Inf. Phar.	Hager
Pulv. guaiaci . .	ʒvj.	℥ss.	ʒj.	℥j.	℥ij.	ʒiv.	℥ss.
Pulv. sinapis . .	℥iss.	—	—	℥ij.	—	℥j.	—
Sulphur. sublim. .	℥iss.	℥viij.	℥ij.	℥ij.	℥iij.	℥j.	℥vj.
Pulv. rhei . . .	ʒiij.	℥j.	ʒij.	℥ss.	—	ʒij.	℥j.
Pulv. potass. nit. .	ʒiij.	—	—	℥ss.	—	ʒij.	—
Pulv. potass. bitart. .	—	℥ij.	℥j.	—	—	—	℥iij.
Pulv. myristicæ .	—	No. iv.	ʒj.	—	—	—	℥ss.
Magnes. carb. . .	—	—	—	—	℥ij.	—	—
Pulv. zingib. . .	—	—	—	—	℥j.	—	—
Mellis vel . . .	q.s.	lb. iij.	℥x.	q.s.	—	q.s.	℥50
Theriacæ . . .	q.s.	—	—	q.s.	℥xij.	—	—

'p. pot. bit.' into 'p. pot. nit.,' with the result that nitre instead of cream of tartar occurs in half the published formulas. Probably the mustard has crept into the place of nutmeg by a similar accident, and pulv. zingib., which is given in several formulas, may be an elegant addition. Treacle sometimes takes the place of honey. In the table on page 454 are a few of the current formulas which we give place to as a silent comment upon the vicissitudes of prescriptions.

Chillie Paste.—Messrs. Hirst, Brooke & Hirst are the owners of the original formula for Smedley's Chillie Paste, a favourite 'rub' for rheumatism, &c. Another preparation is commonly sold in the Midlands as a substitute under the name Chillie Paste, and the British Pharmaceutical Conference have concocted a formula (ung. oleo-resinæ capsici, B.P.C.) for it, which Martindale says 'is too strong for tender skins.' The first of the subjoined formulas is the one generally followed :—

A

Pulv. capsici	℥viij.
Ol. olivæ . . .	℥xxxij.
Cetacei	℥vj.

Macerate the capsicum in the oil for three days, strain, press, filter, and melt the spermaceti in the oil by a gentle heat. Stir constantly until cold.

B

The same as A, but *boil* the capsicum in the oil for seventy-two hours, and when the ointment is finished perfume with lavender oil.

C. *Ung. Oleo-res. Capsici, B.P.C.*

Oleo-resin of capsicum, U.S.P. (capsicin) .	℥j.
Yellow wax . . .	℥ss.
Benzoated lard . .	℥iv.

Melt the wax and lard, add the oleo-resin, and stir until cold.

Chloral Camphoratum, B.P.C.—Equal parts of chloral hydrate and camphor rubbed together until liquid.

CHLORODYNE

This celebrated medicinal speciality was invented by Dr. Collis Browne in 1846, and after a thorough trial of it in India the inventor came home in 1853, and by Mr. J. T. Davenport's assistance the compound was popularised. Imitations of it were quickly put forward, the first being communicated by Mr. A. P. Towle to the second number of *The*

Chemist and Druggist (October 15, 1859) as that used by Dr. Ogden in St. Mary's Hospital, London. It appears to have become the basis of most of the formulas which have since seen the light. It was as follows :—

Chloroform.	ʒvj.
Tr. capsic.	ʒss.
Morph. hydroch.	gr. viij.
Acid. hydrocyan. (Sch.) . . .	gr. xvj.
Ol. menth. pip.	gr. ij.
Acid. perchloric.	gr. xx.
Theriacæ	ʒj.

M.

Add the chloroform last, well rubbing and shaking it ; should keep mixed.

Dr. Ogden himself sent another (*see* page 458) to the issue of January 14, 1860, and, together, these drew criticism from all ends of the earth regarding the bad pharmacy of the recipes, but brought out one of the few analyses of chlorodyne which have been published. Mr. Charles Bullock, at one time President of the Philadelphia College of Pharmacy, was the analyst. Briefly described, the result of his analysis was—

The clear alcoholic solution of chlorodyne gave indications of the presence of resinous bodies in minute quantity, absence of hydrocyanic acid, a pungent or peppery substance, and a green stuff like chlorophyll. The insoluble portion appeared to be glucose, but Mr. Bullock isolated alkaloids from it, amongst them morphia and codeia ; and, although the tests are not altogether above suspicion, he certainly seems to have obtained an alkaloidal residue consisting of more than morphia.

Mr. Bullock came to the conclusion that 'about two-thirds of chlorodyne appears to be treacle ; the remaining one-third chloroform, a small amount of water in which the alkaloids are previously dissolved, a little peppermint and capsicum, and perhaps some cannabis indica. The following recipe (he continues) will furnish a preparation having the pharmaceutical properties of chlorodyne, according to Dr. Ogden :—

Muriate of morphia	gr. viij.
Water	fl. ℥ss.
Perchloric acid (25° B.) . . .	gtt. xx.
Chloroform	fl. ℥iss.
Tinct. of Indian hemp . . .	fl. ʒj.
Hydrocyanic acid (U.S.P.) . .	gtt. xij.
Molasses	fl. ℥ss.
Oil of peppermint	gtt. ij.
Oleo-resin of capsicum . . .	gtt. j.

To the morphia and water in a small flask add the perchloric acid, and heat until a clear solution is obtained. Then add the molasses, previously warmed to render it fluid. Heat the mixture and agitate well. When cold add the other ingredients and mix thoroughly.'

Mr. Bullock had not the courage to give effect to his analytical indications by including in his formula other opium alkaloids besides morphine; but the 'National Formulary' has made good that omission by substituting tr. opii deodorat. for morphine, and Hager goes further by putting both in. Since the fifties an enormous number of guesses have been made respecting the composition of chlorodyne, and we collate from sixteen of these the quantitative statement of ingredients to make 8 oz. of product which is printed on the next page.

It will be seen from the table that it is highly probable that imitations of chlorodyne are as divergent from each other as from the original. Formulators are agreed upon one point, however—viz., to include from eight to twelve articles in the compound; but the list contains about thirty, therefore at least a score should not be there. Then the proportions of active ingredients are dangerously erratic: chloroform varies from 1 dr. to 4½ oz. in the 8 oz., morphine hydrochlorate from 2 to 64 gr. in the 8 oz., and hydrocyanic acid from 20 to 480 minims per 8 oz. So far as the last-mentioned ingredient is concerned, it may be stated that Dr. Collis Browne's chlorodyne does not contain it, and its morphine content is, according to Dr. B. H. Paul, 'practically 2 gr. of actual morphine in 1 fl. oz.,' or fully double the 'British Pharmacopœia' quantity.

Various names have been given to chlorodyne substitutes. The 1885 B.P. preparation was called 'tinctura chloroformi et morphinæ,' and resembled Squire's 'liquor chloroformi compositus': now the B.P. has added 'composita' to the name and altered the composition (*see* page 636). Martindale, who was unable to detect ether in chlorodyne, called his substitute 'liquor chloromorphiæ'; and the 'National Formulary' has it 'mistura chloroformi et opii, *syn.* chloroform anodyne.'

Ingredients in the proportions required to make 8 oz. of the finished preparation	B.P., 1885	Squire	Martindale	Ogden, No. 2	Smith	Stockman	Dowse	Groves	Private	Private	Private	Nat. Form.	Hager	American	American	Bullock
Chloroform.	℥j.	℥j.	ʒ 13	℥ivss.	℥j.	℥iiiss.	ʒj.	℥ij.	℥j.	℥j.	ʒiij.	℥j.	ʒj.	ʒviss.	—	℥iss.
Æther.	ʒij.	ʒij.	—	—	℥ss.	—	ʒj.	ʒvj.	ʒiij.	ʒiiss.	ʒij.	—	♏ 40	—	—	—
Spt. rectificat.	℥j.	℥j.	ʒ 13	—	—	ʒxiv.	—	—	—	ʒvj.	—	—	℥iij.	ʒiij.	—	—
Tr. opii deodorata	—	—	—	—	—	—	—	—	—	—	—	ʒxj.	ʒij.	—	—	—
Morphin. hydrochlor.	gr. 8	gr. 2	gr. 32	gr. 48	gr. 40	gr. 56	gr. 4	gr. 64	gr. 32	gr. 32	acet. gr. 12	—	gr. 3	sulph. gr. 24	acet. gr. 32	gr. 64
Acid. acetic. dil.	—	—	—	—	—	—	—	—	—	—	♏ 12	—	—	—	℥ss.	—
Acid. hydrocyanic. dil. [* Scheele's]	℥ss.	℥ss.	♏ 128	♏ 72*	℥j.	♏ 84*	ʒss.	ʒvj.	ʒij.*	♏ 20	♏ 48	—	—	—	ʒiij.	gtt. 66
Ol. menthæ pip.	♏ 4	♏ 4	♏ 6	♏ 12	♏ 16	—	♏ 4	♏ 32	♏ 16	♏ 12	♏ 15	♏ 8	♏ 8	♏ 12	ʒiij.	gtt. 16
Ext. glycyrrhiz. liq.	℥j.	ʒv.	ʒx.	—	—	—	—	—	—	ʒv.	—	ʒij.	ʒss.	ʒiij.	—	—
Theriaca	℥j.	℥j.	℥iij.	ʒvj.	q.s.	ʒvij.	q.s.	—	℥iv.	℥iiiss.	℥iss.	—	—	—	℥iss.	℥iv.
Syrup.	q.s.	℥ivss.	—	—	—	—	—	℥iv.	—	—	—	q.s.	—	—	—	—
Atropin. sulphas	—	—	gr. $\frac{4}{5}$	—	—	—	—	—	—	—	—	—	—	—	—	—
Pulv. tragacanth.	—	—	gr. 16	—	—	—	—	—	—	gr. 10	—	—	—	—	—	—
Glycerinum	—	—	—	—	—	—	—	—	—	ʒiij.	—	—	—	q.s.	—	—
Aqua destillata	—	—	q.s.	—	—	—	—	ʒij.	℥ss.	℥j.	q.s.	ij.	—	—	—	℥ss.
Tr. quillaiæ	—	—	—	—	—	—	—	—	—	—	—	℥j.	—	—	—	—
Tr. capsici	—	—	—	ʒiij.	℥iss.	ʒiiiss.	—	—	—	ʒj.	ʒj.	℥ss.	—	—	—	—
Tr. cannabis indicæ	—	—	—	ʒvj.	—	ʒvij.	—	Ex. ʒj.	Ex. gr. 12	ʒij.	—	℥j.	—	Fl. ex. ʒiij.	Ex. gr. 64	℥j.
Acid. perchloric.	—	—	—	ʒij.	—	♏ 70	—	ʒij.	—	—	—	—	—	—	—	gtt. 160
Æther. chloric.	—	—	—	ʒvj.	—	—	—	—	—	—	—	—	—	—	℥ij.	—
Mucilag. acaciæ	—	—	—	—	℥ij.	—	ʒiiss.	—	—	—	—	—	—	—	—	—
Ext. belladonnæ	—	—	—	—	—	—	℈j.	—	—	—	—	♏64fl.	—	♏50fl.	—	—
Capsicin	—	—	—	—	—	—	gr. $\frac{3}{4}$	—	—	—	—	—	—	—	ʒiij.	gtt. 8
Capsicum	—	—	—	—	—	—	—	gr. 8	gr. 4	—	—	—	—	—	—	—
Caramel	—	—	—	—	—	—	♏ 8	—	—	—	—	—	—	—	—	—
Syr. glycyrrhizæ	—	—	—	—	—	—	—	—	—	—	—	—	℥iv.	—	—	—
Aq. amygd. amar. conc.	—	—	—	—	—	—	—	—	—	—	—	—	ʒv.	—	—	—
Tr. zingiberis	—	—	—	—	—	—	—	—	—	—	—	—	—	℥ij.	—	—

The best manner of making these compounds is exhibited in the following formula, which works nicely :—

		In ♏x.
Chloroformi	℥iss.	♏1¼
Ess. menthæ piperit. B.P.	♏ 96	♏⅙
Tr. capsici	♏ 144	♏¼
Ext. opii liquid.	♏ 144	♏¼
Tr. cannab. ind.	♏ 192	♏⅓
Spt. rectificat. ad	℥iv.	

Mix to form a solution, which add in small portions at a time to the following mixture :—

		In ♏x
Morphinæ acetat.	gr. xxiv.	gr. $\frac{1}{24}$
Pulv. tragacanth.	gr. xvj.	
Theriacæ	℥iij.	
Ext. glycyrrhiz. liq.	℥iss.	
Aq. ad	℥viij.	

Put the tragacanth in a dry bottle with a few drops of S.V.R., add, all at once, the water (in which previously dissolve the morphine acetate). Shake thoroughly well ; then add the treacle and extract of liquorice, and shake. Now add the first solution, a little at a time, shaking well after each addition. The finished product should measure 12 oz.

Red Chlorodyne

Chloroform	℥ij.
Ether	℥ss.
Tincture of cannabis indica	℥j.
Tincture of capsicum	℥j.
Muriate of morphine	℈j.
Oil of peppermint	♏xvj.
Dilute hydrocyanic acid	ʒj.
Glycerine	℥iij.
Water	℥j.
Cochineal colouring	a sufficiency
Rectified spirit	℥xvj.

Mix in the usual way.

Transparent Chlorodyne

Morph. hydrochlor.	gr. xij.
Spt. rectif.	℥iss.
Tr. cannab. ind.	ʒij.
Ol. menth. pip.	♏vj.
Tr. capsici	ʒj.
Chloroformi	℥ss.
Ac. hydrocyan. dil.	ʒj.
Glycerini ad	℥vj.

Dissolve the morphine in the spirit, add the other ingredients in their order, and colour with sacch. ust. q.s., as on keeping it becomes blue. If desired to be colourless omit the tr. cannab. ind.

C. Chlorodyne

Spt. menth. pip.	ʒij.
Spt. camphor.	ʒij.
Spt. chloroformi	ʒij.
Tr. capsici	ʒij.
Tr. zingib.	ʒij.
Tr. catechu	ʒvj.
Tr. digitalis	℥j.
Acid. hydrocyan. dil.	ʒij.
Glycerini	℥iij.
Spt. vini rect.	℥ij.

M.

Used in India in cholera cases. Dose : ♏xx. to ʒj. in water every fifteen minutes until vomiting and purging stop.

Chloroformum Belladonnæ, B.P.C.

Prepared from belladonna root in No. 60 powder in the same way as chlorof. aconiti (page 460).

Chloroformum Aconiti, B.P.C.

Bruised aconite-root .	℥xx.
Strong solution of ammonia . . .	℥iss.
Distilled water . .	℥xx.

Macerate for four hours, dry, powder (No. 40), and after macerating with 20 oz. chloroform for twenty-four hours percolate with chloroform until 30 oz. of percolate is obtained.

In 1864 the late Mr. Peter Squire introduced these chloroforms, made 1 in 1 by simple percolation with chloroform. In consequence of an observation by Mr. T. B. Groves, the British Pharmaceutical Conference made the modifications noted above, but Squire's 'Companion' states that 'no more alkaloid is extracted,' and practically recommends the old 1-in-1 preparation, which is just as strong, and is less troublesome to make than the above. A Chloroform. Hyoscyami is made similarly from henbane-root. Chloroformum Camphoratum, B.P.C., is a solution of camphor 2 oz. in chloroform 1 oz.

Collodia—Collodions or Colloids.—The basis of most of the preparations of this class is the collodion of the 'British Pharmacopœia,' which is a solution of 1 part of pyroxylin in 36 parts of ether (s.g. 0·735) and 12 parts of rectified spirit by volume. Certain substitutes for pyroxylin prepared from cotton have been proposed, such as photoxylin, a nitro-cellulose made from wood pulp; but the initial purity of cotton fibre gives it superiority and convenience which make it eminently suitable for pharmaceutical purposes. The flexible or elastic collodion, containing 10 minims of castor oil and 20 gr. of Canada balsam in 10 oz. of collodion, is preferred in certain cases, as it does not crack so readily as the plain variety.

Anodyne Colloid (Laskersteen's)

Hydride of amyl . .	℥j.
Aconitine . . .	gr. j.
Veratrine . . .	gr. vj.
Collodion to . . .	℥ij.

M.

For neuralgia, sciatica, lumbago, and all muscular pains. Should the pain continue apply a piece of moist spongio-piline to the film.

Martindale states that amyl hydride ʒss. and absolute alcohol ℥ss. make a better preparation.

Arnica Collodion

Arnica in coarse powder .	℥iv.
Ether	℥xij.
Rectified spirit .	a sufficiency

Mix the ether with 4 oz. of spirit, moisten the arnica with the fluid, pack in a percolator, and after six hours percolate, continuing the percolation with rectified spirit until 16 oz. is obtained. In this dissolve 128 gr. of pyroxylin.

Collodium Belladonnæ, B.P.C.

(syn. *Emplast. Belladon. Fluid.* An imitation of the preparation introduced by Messrs. T. & H. Smith, of Edinburgh.)

Alcoholic extract of belladonna leaf, as much as contains .	44 gr. alkaloid
Alcohol (90 p.c.) . .	℥ix.

Dissolve and add

Ether	℥ix.

Shake well, set aside for twelve hours, decant the clear liquid, and in it dissolve

Camphor . . .	gr. 130
Pyroxylin . . .	℥ss.

Make up to 20 oz. with a mixture of equal parts of ether and rectified spirit.

Collodium Callosum - Corn Paint

Acid. salicylic . . .	℈ij.
Ext. cannab. ind. . .	gr. vj.
Alcohol. absol. . .	ʒj.
Collodii flex. ad . .	℥j.

Mix the first three and add the collodion.

Collodium Capsici

Prepared in the same manner as arnica collodion and of the same strength; or dissolve oleo-resin of capsicum ʒiss. in ether ℥xij. and spirit ℥iv., filter if necessary, and add the requisite weight of pyroxylin.

Carbolic Colloid.

Sir B. W. Richardson's formula is phenol ℈j. to styptic colloid ℥j. For toothache, equal parts of plain collodion and melted absolute phenol.

Collodium Crotonatum

(syn. *Coll. Tiglii, N.F.*)

Croton oil . .	10 grammes
Flexible collodion .	90 grammes

Mix.

Collodium Iodatum, N.F.

Iodine reduced to powder . .	5 grammes
Flexible collodion .	95 grammes

Introduce the iodine into a bottle, add the flexible collodion, and agitate until the iodine is dissolved.

NOTE.—It is better to shake the iodine with a little spirit of ether before adding the collodion.

Collodium Iodoformatum, N.F.

Same strength as coll. iodatum.

Collodium Stypticum

(*Styptic Colloid*)

The late Sir B. W. Richardson, M.D., introduced this, directing it to be made by digesting pure tannin in absolute alcohol for several days, then adding absolute ether until the mixture becomes fluid; next gun-cotton until it ceases to be dissolved; lastly a little tincture of benzoin. The B.P.C. Formulary gives the following:—

Benzoin . . .	gr. xliv.
Absolute alcohol . .	℥j.

Dissolve, filter, and add

Tannin	℥j.
Pure ether . . .	℥iv.
Pyroxylin . . .	gr. xliv.

Mix, and in three days decant.

Another formula is

Carbolic acid . .	10 parts
Tannin . . .	5 parts
Benzoic acid . . .	5 parts
Collodion . . .	100 parts

Agitate until solution is complete.

Collyria

Critchett's Eye-washes

1

Lapidis divini	gr. iv.
Aquæ rosæ	℥vj.

Solve.

2

Acidi borici	gr. viij.
Aq. laurocerasi	℥ss.
Aq. sambuci ad	℥viij.

M. et S.

The first lotion is for simple inflamed eyes; the second is to be used when there is much irritation.

Mackenzie's Eye-lotion

Hydrarg. perchlor.	gr. j.
Ammon. chlor.	gr. vj.
Pulv. cocci cacti	gr. iss.
Spt. vini rect.	ʒj.
Aquæ ad	℥vj.

Mix and after twelve hours filter.

(LABEL)

Lotion for the Eye.

Directions.—Pour out about a tablespoonful of this fluid, and mix it with as much boiling water in a teacup. With a piece of old linen or soft sponge bathe the eyes with the mixture while it is yet warm for a few minutes, throwing back the head, so as to allow a little to flow in upon the eye.

Keep the cup covered, and, having rewarmed the contents, repeat the bathing of the eye three times a day.

Wardrop's Eye-lotion

Liq. ammon. acet.	℥j.
Aquæ rosæ	℥vij.

M.

Confectio Damocratis or Mithridate.—An ancient confection, which survived through centuries to find a place in a modified form in the old London Pharmacopœias, the recipe having forty-five ingredients, or about half what was in it originally. 'Theriaca Andromachi' was a similar preparation; indeed, the two are sometimes confounded. It would serve no useful purpose to take up half a dozen pages by repeating these formulas, even although *The Chemist and Druggist* has sometimes been asked for them; and an occasional, though rare, recipe turns up containing the confection or theriaca. As a curiosity in the improved pharmacy of the eighteenth century, we quote the Edinburgh formula :—

Theriaca Edinensis

Virginian snake-root	10 oz.
Contrayerva-root	6 oz.
Resin of guaiacum	4 oz.
Lesser cardamom seeds	2 oz.
Myrrh, English saffron, opium	each 1 oz.

Rob of elderberries, thrice the weight of the powders.
Canary wine, as much as is sufficient to dissolve the opium.

Make them into an electuary according to art.

It will be seen that confectio aromatica c̄ opio, B.P., is a good substitute for mithridate and theriaca, and may be used when they are wanted. (*See also* 'Mithridate,' p. 563.) Rob of elderberries is an interesting pharmaceutical fossil. At one time there were several medicinal 'robs,' the term being applied to inspissated vegetable juices, generally containing added sugar. Rob of elderberries was made by adding ½ lb. of sugar to 2 quarts of strained elderberry juice, and evaporating the mixture to the consistence of honey.

Coster's Paste

Iodi	ʒij.
Ol. picis rect. . . .	℥j.

Mix carefully, applying heat if necessary to promote ebullition, after which allow the mixture to cool, and preserve.

This is the original formula. Remington gives one consisting of similar proportions as above of alcoholic iodine (1 in 8) and oil of cade, but this is wrong.

Cremor Bismuthi

Hydrated oxide of bismuth	℥j.
Water	℥iv.

Rub together until smooth.

This is the recognised American and English formula for cream of bismuth. The German one is of the same strength, but he vehicle is glycerine ℥j. and cremor simplicis ℥iij., the latter being a mixture of two egg-yolks, sugar ʒiiss., and fresh milk heated to 50°- 60° C. ʒv.

Cramp Draught

The subjoined formula is a specific for a common complaint, not dangerous but very painful—viz., cramp in the legs and feet at night. Relief comes five minutes after taking the following draught:—

Tr. aconiti . . .	♏v.
Sodii bromid. . . .	gr. xij.
Tr. chloroformi co. . .	♏xv.
Aq. menthæ pip. ad .	℥j.

Repeat in an hour or two if required. The draught also relieves an attack of stomach spasm in a very few minutes.

Hydrated oxide of bismuth ($Bi_2O_3.3H_2O$), for cremor bismuthi, should be recently made, and, if possible, moist, as in that condition the particles are exceedingly fine, and make a much smoother cream than the dried hydrated oxide. The way to prepare it is clearly laid down by the 'National Formulary,' viz.: Mix 6 oz. of bismuth subnitrate with 4 oz. of water and add 9 oz. (by weight) of nitric acid, agitate, and heat to promote solution. When this is done pour the solution into a gallon of water, to which 1 oz. (by weight) of nitric acid has been added, and strain through absorbent cotton. Now mix 12 oz. of ammonia solution (10 per cent.)

with 2 gals. of water, and into this pour the bismuth solution slowly and with constant stirring. A 4-gal. jar should be used to hold the mixed solutions. After the precipitate subsides pour off the clear liquid and fill up the jar with water, again stirring; and so repeat the washing twice. Finally dissolve an ounce of sodium bicarbonate in 3 or 4 gals. of water, wash the precipitate with this, pour upon a calico strainer, and continue the washing until the wash-water is quite tasteless. Let the precipitate dry on the strainer (if it is wanted dry) and rub to powder by passing through a sieve.

There is always some loss of bismuth, but not much, in preparing by precipitation with ammonia, ammonia salts being excellent solvents of bismuth compounds. The degree of hydration in making hydrated oxide of bismuth is a bit erratic, but the compound formed does not appear to be $Bi(OH)_3$—*i.e.*, a hydroxide. Experience, however, has demonstrated that the compound prepared as above directed is constantly $Bi_2O_3.3H_2O$, and if no heat is used in drying it it remains so. As 15 parts of bismuth subnitrate ($BiONO_3.H_2O$) yield 26 parts of the hydrated oxide ($Bi_2O_3.3H_2O$), by taking subnitrate in proportion to the amount of hydrated oxide required, the weight of the moist precipitate equal to the cremor bismuthi required may be reckoned. This preparation should not be confounded with lac bismuthi.

Cremor Lithargyri (Squire)

Solution of subacetate of lead	℥j.
Cream	℥vij.

Mix.

Used as an application in eczema.

Cremor Hamamelidis

Essence of witch hazel .	℥ij.
Soft paraffin . . .	℥iv.
Lanoline . . .	℥iv.

Mix thoroughly.

NOTE.—'Hazeline cream' is a trade-marked title, and the above formula is not intended as an imitation of that preparation.

Cremor Camphoræ

Sapon. commun. . .	℥iss.
Camphor. . . .	ʒvj.
Ammon. chlorid. . .	℥iss.
Liq. ammoniæ . .	℥iss.
Ol. terebinth. . . .	ʒvj.
Aquæ	℥xij.

Dissolve the soap in half the water mixed with the ammonia, and the chloride in the rest of the water. Mix, add the camphor dissolved in the turpentine, and shake well to emulsify.

Cremor Morrhuæ

(*See* Emulsions of Cod-liver Oil). The name was originally applied to an emulsion made with yolk of egg.

Cremor Zinci (Martindale)

Zinci oxidi	℈iv.
Vaselini	℥j.

Mix and perfume.

Dec. Aloes Co. Conc.

Finest red Socotrine aloes	℥ij.
Saffron	℥ss.
Boiling distilled water	℥xx.

Stir well together; let stand for twelve hours; strain. Add to the strained infusion

Glucose-syrup (by weight)	℥vj.

Evaporate on a water-bath to $9\frac{1}{2}$ fl. oz. Coarsely powder

Elect gum myrrh	℥ss.

Rub up with

Carbonate of potassium	℥ss.
and	
Liquid extract of liquorice	℥viij.

added by degrees. Let it stand for twelve hours; strain; mix with the solution of aloes. Add

Tincture of cardamoms, concentrated	℥viiss.

And water, if required, to make ℥xxv.

The tincture is made by percolating the spices (in four times the quantity ordered in the B.P.) with proof spirit, omitting the raisins, the fruit-sugar of which is replaced by a Glucose-syrup, which is a mixture of 12 parts liquid glucose, 3 parts glycerine, and 1 part water, all by weight.

One part of dec. aloes co. conc. diluted with 3 parts of water represents adequately in strength, and almost exactly in flavour, the recent decoction (B.P. 1885).

Dobell's Aperient.—A general aperient which Dr. Horace Dobell pretty frequently prescribed when he was in practice. It is for the purpose of establishing a regular and complete action of the liver and of the whole alimentary canal.

Original Formula

Ext. cascar. sagrad. liq.	gr. iij.
Ext. rhei	gr. ij.
Jalapini	gr. j.
Podophyllini	gr. $\frac{1}{25}$
Cocainæ hydrochlor.	gr. $\frac{1}{6}$
Ol. caryoph.	♏ss.
Glycerini	♏v.
Spt. vini rect. ad	ʒss.

Dissolve carefully and filter.

Dose: ♏x. to ♏xxx.

The ext. casc. sag. liq. is made by evaporating ♏xij. of liquid aqueous extract down to gr. iij.

NOTE.—This is much more easily made by the annexed modification suggested by Mr. J. F. Brown.

Modified

Ext. cascar. sagrad. liq.	♏ 144
Ext. rhei	gr. xxiv
Jalapini	gr. xij.
Tr. podophyllini (1 gr. in 60 min.)	ʒss.
Cocainæ hydrochlor. (dissolved in ʒss. aqua)	gr. ij.
Olei caryophylli	♏vj.
Glycerini	ʒj.
Spt. vini rect. ad	℥iss.

Dissolve the jalapin in about 3 dr. of the spirit; add the solution of cocaine and the glycerine, and rub up the extract of rhubarb in the mixture until dissolved; mix in the remaining ingredients and filter.

ʒj. = ʒss. of the original.

Drunkenness Cures.—Many of the nostrums which are introduced for subduing the 'drink crave' owe their activity to alcohol or aromatics, or both; and it rarely happens that they are successful unless they are well backed up by moral influence. The few formulas which we quote here will suffice to show the nature of the compounds which are in request. One of the oldest and most esteemed in religious circles is the draught erroneously called the 'Rev. Newman Hall's Dipsomania Cure.' It was this preacher's father, the Rev. Vine Hall, who made the compound known through a tract published by Drummond, of Stirling. In it the writer says: 'A physician was consulted as to the possibility of medicine being rendered effectual to stop the disposition to intemperance, and he pledged his credit that if his prescription was punctually followed the happiest results would ensue. The remedy was as follows: Sulphate of iron, 5 grains; magnesia, 10 grains; peppermint water, 11 drachms; spirit of nutmeg, 1 drachm. This forms one draught; two draughts to be taken each day.' It will be seen that this draught is equivalent in alcoholic strength to a dessertspoonful of whisky, and this ingredient, together with the stimulating effect of the nutmeg and tonic properties of iron, may gradually wean the victim from the craving for alcohol. The originator advised 'prayer' to be used along with it.

One of the most famous drink cures of recent times is that going by the name 'Gold Cure,' and invented by an American doctor called Keeley. This cure was seriously considered by the Society for the Study of Inebriety, who passed the following resolutions in respect to it:—

> This meeting is of opinion that any so-called 'cures' for inebriety the composition of which is not disclosed are unfit to be commended by honourable members of the medical profession, who are bound to place the full details of their treatment before their professional colleagues, a requirement as essential in the interest of the public as it is consonant with the disinterested practice of scientific therapeutics.
>
> This meeting, having been informed by a competent London analyst, who has made a special analysis, that the alleged 'bichloride-of-gold cure' shows no trace of gold or of chlorides, and contains 27·55 per cent. of alcohol, condemns unreservedly the prescription of such an intoxicating preparation to an inebriate.

The Keeley treatment consists in giving the patients a hypodermic injection and a mixture, keeping them meanwhile under the surveillance characteristic of a home for inebriates. The analysis already referred to showed that the mixture contains no active ingredient except alcohol and a trace of a mercurial salt, with 6 per cent. of sugar; but several formulas have been published as approximate representations. The best seem to be as subjoined:—

The Injection

Strychninæ sulphat. .	gr. ss.
Atropinæ . . .	gr. $\frac{1}{4}$
Acidi borici . . .	gr. xv.
Aq. destillat. . . .	℥iv.

Fiat solutio.

Another formula for this gives strych. nit. gr. ix. to aq. ℥iv., coloured with potas. permang.

The Mixture or 'Whisky'

I

Apomorphin. muriat. .	gr. j.
Aloin.	gr. ij.
Tr. cinchon. co. . .	℥iij.
Aq.	℥j.

Fiat mistura.

A teaspoonful every two hours while awake.

II

Sodio-auric chloride .	gr. xij.
Ammonium chloride .	gr. vj.
Strychnine nitrate . .	gr. j.
Atropine . . .	gr. $\frac{1}{4}$
Fluid extract of cinchona	℥iij.
Fluid extract of coca .	℥j.
Glycerine . . .	℥j.
Water	℥j.

Mix.

Dose: 1 teaspoonful every two hours while awake.

A third formula for this whisky is like No. II., with the addition of hydrastine and aloin. Others have been published, but they need not be referred to further.

Patients who are undergoing the Keeley treatment know that they are getting 'whisky' of some kind in the red mixture, and the truth of the composition lies somewhere between the first and second of the above formulas; but there is good reason for believing that there is neither strychnine nor atropine in the mixture, but apomorphine muriate in sufficient dose to cause a nauseating effect, that being part of the 'cure.' Strychnine has a good effect upon dipsomaniacs, and has been used by physicians in the form of subcutaneous injections and pills, the latter containing $\frac{1}{60}$ gr. of nitrate of strychnine. In 1893 and 1894 considerable excitement was caused in this country by the advent of the Tyson Cure, which under the ægis of religious institutions enjoyed much popularity. This 'cure' was the subject of a prosecution under the Pharmacy Act of Victoria in 1893, when the Government analyst reported that he had obtained from the 'cure' 0·11 per cent. of strychnine and brucine, and he did not hesitate to say that strychnine was its active constituent. Conviction followed upon this evidence.

Quite distinct from these alcoholic preparations are those which owe their virtues entirely to solid ingredients. A well-known specific for drunkenness is sold in powders, each weighing about 8 gr. The following are attempts at imitating it:

I

Pulv. hydrastis canad. .	gr. ss.
Pulv. cinchon. pal. .	gr. ss.
Pulv. capsici . .	gr. $\frac{1}{8}$
Pulv. zingib. . .	gr. iij.
Pulv. glycyrrhiz. .	gr. iv.

Fiat pulv.

II

Pulv. zingib. . . .	℥ss.
Pulv. canellæ . . .	℥ss.
Pulv. fœniculæ . .	ʒj.
Pulv. cassiæ . . .	ʒij.
Pulv. glycyrrhiz. . .	℥ij.

M. et div. in pulv. gr. viij.

A more recent anti-dypsomania powder differs from the foregoing in containing an appreciable quantity of ipecacuanha, so that those who take it become sick. About 5 gr. of pulv. ipecac. and the same of canella comes near it.

Dr. D'Unger's Cure for Drunkenness is ext. cinchon. rub. liq., made by macerating 1 lb. of the bark in 16 oz. of proof spirit, and producing 8 oz. of liquid extract. Dose to begin with, a teaspoonful every three hours; on the third day half a teaspoonful, then 15 drops, and so on, a daily reduction until a cure is effected, which was said to be seven days. That was sixteen years ago, and there are drunkards yet.

Eau d'Arquebusade *vel* Aqua Vulneraria

I

Flor. lavandulæ . .	℥j.
Herb. absinthii . .	℥j.
Herb. hyssopi . .	℥j.
Herb menthæ pip. .	℥j.
Herb. rosmarini . .	℥j.
Herb. rutæ . . .	℥j.
Herb. salviæ . . .	℥j.
Spt. rectificat. . .	℥xxiij.
Aquæ	Oiiss.

Macerate for a fortnight and distil 42 oz.

II

Oils of wormwood, lavender, thyme, peppermint, rosemary, rue, and sage, of each . . .	♏xvj.
Rectified spirit . .	℥xxx.

Mix and add

Warm water . . .	℥xl.

Strain through cotton-wool.

The first is a simplified form of an old and complex recipe, and the second is for extemporaneous use.

Eau d'Arquebusade de Théden

Rectified spirit	℥viiss.
Distilled wine-vinegar	℥viiss.
Dilute sulphuric acid	℥iss.
White sugar	℥ij.

Mix.

Eau de Luce

(*Tr. Ammoniæ Co., P.L.; Spt. Ammoniæ Succinatus*)

I

Mastic	ʒij.
Rectified spirit	ʒix.
Oil of lavender	♏xiv.
Oil of amber	♏iv.
Strong solution of ammonia	Oj.

Macerate the mastic in the spirit, that it may dissolve, and pour off the clear tincture; then add the other ingredients and shake them all together.

The oil of amber was omitted from the latest editions of the 'London Pharmacopœia' at the suggestion of Brande. This was a mistake, for the amber odour had been associated with the spirit for a century before the London authorities removed it. Eau de Luce was invented by an apothecary at Lille, and the first formula followed in this country was a pure succinated ammonia without mastic; but as it lost its opacity soon the amber was introduced. Soap and benzoin are used on the Continent for the same purpose.

II. *The First Formula*

Oil of amber	60 drops
Rectified spirit	1 oz.
Volatile spirit of ammonia	12 oz.

Mix them together and distil in a retort with a moderate fire.

III

Tincture of benzoin	ʒj.
Oil of lavender	gtt. x.
Oil of amber	gtt. v.
Soft soap	gr. iv.
Solution of ammonia	℥ij.

Mix and filter.

Originally used as a specific for the bites of venomous snakes; in these latter days its reputation has been reduced to the simple dictum of the authors of the 'Extra Pharmacopœia'—'Topically relieves bites of insects'—so does plain ammonia. It was, and is, esteemed as 'a powerful nervous stimulant. Dose about 20 or 30 minims in an ounce and a half of camphor mixture.'

Eau Sédative

(syn. *Aqua Sedativa, N.F.; Lotio Ammoniacalis Camphorata, Fr. Cod.; Eau Sédative de Raspail*)

	Codex.	N.F.
Liquor. ammoniæ	℥j.	℥ij.
Aquæ destillatæ	℥xvj.	ad ℥xvj.
Sal. marin.	℥j. sodii chlorid.	℥j.
Spt. camphor.	ʒiss.	ʒiss.
Spt. rectificat.	ʒiss.	—

Dissolve the salt in half the water, add the ammonia and spirits, then the rest of the water.

Originally there were three strengths of Raspail's Eau Sédative strong, medium, and common. The 'National Formulary' strength is the strongest, but it makes it 'ad

℥xvj.,' whereas the original directs 16 oz. of the water to be used. The N.F. also uses common salt, but sea salt gives the real milky-looking eau sédative. Mr. Joseph Ince says of the lotion:—'The effect of this remedy is described as nothing less than marvellous, its action depending partly on the absorption of ammonia and salt (the two great solvents of the coagulation of the blood) by the superficial vessels of the skin, and partly, of course, upon the camphor which it contains. By keeping it acquires a smell of bitter almonds, and after a certain time a white powder is deposited. It is not then considered as unfit for use, but requires to be well shaken before applying it. Under the influence of this preparation fever is said to disappear, and endless maladies to be subdued.' Truly a marvellous remedy if used with a grain of salt more than there is in it.

Elæosacchara are aromatic sugars, literally 'oil sugars,' much esteemed on the Continent for flavouring medicines. They are made by triturating essential oils with powdered sugar and sifting once or twice. The recognised strength is 2 per cent., or 9 minims to each ounce (avoir.) of icing-sugar. The most common 'oil sugars' are anise, fennel, and peppermint.

ELIXIRS

These preparations are not favourites in British pharmacy. Of old they were acid or balsamic alcoholic liquids, examples of which survive to this day in elixir of vitriol, paregoric elixir, and elixir proprietatis (tr. aloes co.); but United States pharmacists have created a new class of elixirs, consisting of weakly alcoholic, sweet, and aromatic liquids, which are supposed to be typical of 'elegant pharmacy.' Such preparations are numbered by the score, but recent experience in the United States seems to indicate a falling off in favour, and the 'Pharmacopœia' of that country contains only two formulas—elixir aromaticum and elixir phosphori. The 'National Formulary' contains seventy-seven elixirs, and our own 'Unofficial Formulary' seven. We cannot in this volume enter into a complete exposition of this class of preparations, but refer those who wish to know all about the history, &c., of them to Mr. J. Uri Lloyd's book, 'Elixirs,' published by R. Clarke & Co., Cincinnati. We confine our remarks to the more frequently required preparations, and to some old-fashioned elixirs still in demand.

Elixir Acidum Halleri

(syn. *Aqua Rabelii, Elixir Acidum Dippelii, Mistura Acidi Sulphurici*)

Sulphuric acid . .	℥j.
Rectified spirit . .	℥iij.

Both by weight. Add the acid gradually to the spirit with agitation.

NOTE.—The two leading English authorities are not agreed about this preparation. Squire gives the above proportions—*i.e.*, 1 and 3—and also coloured with 1 per cent. of red poppies, the latter being the French form for *Eau de Rabel*. Martindale gives the Italian form—equal parts by weight of acid and spirit. The above formula is the German one, and is most in use. It is practically sulphovinic acid, and is given in doses of 5 to 20 drops in sweetened water.

Elixir Adjuvans, N.F.

Sweet-orange peel . .	℥ij.
Wild-cherry bark . .	℥iv.
Peeled liquorice-root .	℥viij.
Coriander . . .	℥j.
Caraway . . .	℥j.
Rectified spirit, water, syrup, of each .	a sufficiency

The solids to be reduced to No. 40 powder. Macerate the orange-peel in 4 oz. of water for twelve hours. Then mix with the other solids, damp with 4 oz. of a mixture of 1 volume of spirit and 2 volumes of water, pack in a percolator, and percolate with the dilute spirit until 96 oz. of the percolate are obtained. To this add 32 oz. of syrup. Mix and filter.

Elixir Aletridis, B.P.C.

This is an imitation of Aletris Cordial, and is made by mixing together ext. altrid. liq. ℥v., ext. glycyrrhiz. liq. ʒx., tr. aurant. ʒx., syrup. ℥viiss., and aq. dest. ad ℥xx.

The dose is ½ to 1 fl. dr.

Elixir Amarum (German)

Ext. absinthii . . .	ʒv.
Elæosacch. menth. pip. .	ʒiiss.
Aq. destillat. . . .	ʒxiiss.

Rub together, then add

Tr. aromat. . . .	ʒiiss.
Tr. amaræ . . .	ʒiiss.
Cretæ gallic. . . .	ʒss.

Shake well and, after standing for a week, filter.

Elixir Anisi (Aniseed Cordial, N.F.)

Anethol, or English oil of anise	♏xxv.
Oil of fennel . . .	♏v.
Oil of bitter almonds .	gtt. j.
Rectified spirit . .	℥iv.
Syrup	℥x.
Water	℥ij.

Dissolve the oils in the spirit, add the syrup and water, and set aside for twelve hours; then add 1½ dr. of mag. carb. Shake, and filter through a wetted filter until it passes through clear.

Elixir Aurantii, U.S.P. 1880

Oil of orange . .	1 part
Cotton . . .	2 parts
Sugar in coarse powder	100 parts
Rectified spirit and water, of each a sufficiency to make .	300 parts

Mix spirit and water in the proportion of 1 to 3. Sprinkle the oil on the cotton and tease it out to distribute equally, put it into a funnel, and pass the dilute spirit through it until 200 parts are obtained. In this dissolve the sugar without heat, and strain.

NOTE.—*See also* Elixir Simplex.

Elixir Aurantii Co. (Hoffmann's)

Cort. aurantii . . .	℥iss.
Cort. cinnamomi . .	ʒiiss.
Potass. carbonat. . .	℈ij.
Vin. xerici . . .	℥viij.

Macerate seven days and strain, washing the marc with sherry to 7½ oz., in which dissolve

Ext. gentianæ . .	gr. 75
Ext. absinthii . . .	gr. 75
Ext. trifolii fibr. . .	gr. 75
Ext. cascarillæ . .	gr. 75

Filter.

Elix. Aromat., U.S.P.

Spt. aurantii co. . .	ʒiij.
Syrup.	℥xij.
Spt. rectificat. . .	℥viij.
Aq. destil. ad . .	℥xxxij.
Calcii phosph. . .	℥ss.

Filter through a wetted filter-paper, returning the filtrate until it passes through clear.

Elixir Bismuthi, N.F.

Ammonio-citrate of bismuth	gr. 256
Hot water . . .	℥j.

Dissolve and allow to stand until clear, decant the clear liquor, and reserve. To the insoluble portion add just enough liq. ammon. to dissolve it, add the watery solution, and aromatic elixir to ℥xvj. Mix and filter.

ʒj. = bism. am. cit. gr. ij.

Cascara Sagrada Elixir

Messrs. Parke, Davis & Co. published in 1882 the formula for their cascara cordial, and, although it may not be the working formula, it seems to give approximately the composition of the preparation. It is as follows:—

	Grammes
Cascar. sagrad. . .	100
Berberis aquifolia . .	37
Diluted alcohol . .	233
Coriander . . .	17
Angelica-root . .	2
Oil of anise . . .	0·13
Oil of orange . .	0·13
Oil of cassia . .	0·005
Granulated sugar . .	288
Fluid extract of liquorice	12

Tincture of cudbear, a sufficiency.
Water to make 1 litre.

Directions.—Make a decoction of the cascara sagrada with the water at 212° F., and when cold filter. Dissolve the sugar in the filtrate. Pack the coriander, berberis, and angelica (reduced to coarse powder) in a percolator and displace with the alcohol in which the oils have been dissolved. Lastly mix the cascara solution, the aromatic percolate, and tincture of cudbear together, add the liquorice extract, and enough water to make 1 litre.

In the following formulas for similar preparations the soluble fluid extract of cascara, which is not so bitter as the B.P. one, may be used (see also B.P. p. 324):—

Extract. cascara sagrada liq.	℥j.
Ext. glycyrrhizæ liq. .	℥ij.
Spt. chloroformi . .	ʒij.
Syrupi ad . . .	℥vj.

M.

Dose: 1 to 2 teaspoonfuls to be taken at bedtime every night.

Dr. Dujardin-Beaumetz's

Fluid extract of cascara sagrada	℥iij.
Glycerine	℥iij.
Oil of orange	♏vj.
Oil of cinnamon	♏ij.
Spirit	℥viij.
Syrup	℥x.
Water to	Oij.

Mix.

Dose : An ounce or more.

Elixir Carminativum (Dalby)

(*Mist. Carminativ.*, *N.F.*)

Magnes. carb.	℥j. (troy)
Potassæ carb.	℈j.
Tr. opii	ʒiij.
Ol. carui	gtt. iv.
Ol. fœniculi	gtt. iv.
Ol. menthæ pip.	gtt. iv.
Syrupi	℥iiss.
Aq. ad	℥xvj.

Triturate the oils with a drachm of the magnesia and 12 oz. of water gradually added ; then add the rest of the ingredients *sec. art.*

We give this formula first place because it is semi-official ; but the preparation is not like the original, and does not keep. The following, without opium, is better :—

Magnes. calc.	℈j.
Sacchari albi	ʒij.
Tr. asafœtidæ	gtt. xxx.
Tr. hyoscyami	gtt. xxx.
Ol. menthæ pip.	gtt. ij.
Aq. fontan.	ʒj.

M.S.A.

Dose : 5 to 10 drops.

Paris's formula contains tinctures of castor, opium, and cardamoms, and no sugar.

Elixir Cinchonæ *vel* Elixir Calisayæ

(N.F.)

Tr. cinchonæ	℥iij.
Syr. simplicis	℥iiss.
Glycerini	℥iiss.
Elixir. aromat.	℥xij.

Mix, and filter through a wet filter.

A form more generally used in U.S.A. is :—

Quininæ sulph.	gr. xxx.
Cinchonidinæ sulph.	gr. xv.
Aquæ bullient.	℥viij.

Solve et adde

Elixir. aromat. U.S. ad	Cong. j.
Tr. persionis comp.	q.s. to colour deep red

Some of the leading New York pharmacies adopt more complex formulas for Calisaya elixir, such as the following modification of one suggested by Mr. Alfred B. Taylor in 1859 :—

	Cort. cinch. rub.	3 lbs. 2 oz.
	Cort. cinnam.	6 oz.
	Fruct. coriand.	3 oz.
	Fruct. anisi	3 oz.
	Fruct. carui	1¾ oz.
	Sem. angelicæ	¾ oz.
	Rad. angelicæ	163 gr.
(1)	Spt. vini gallici	32 oz.
(2)	Aquæ	288 oz.
	Syr. aurantii	80 oz.
(3)	Spt. vini rect.	1 gal.
(4)	Spt. hibernici	½ gal.
	Syr. simpl.	1½ gal.
	Tr. persionis	q.s.

Percolate the powdered solids with 1, 2, 3, 4 mixed, then add the syrups, and colour pink with the tincture of cudbear.

Various preparations of Calisaya elixir are made. The hypophosphite one contains 8 gr. each of calcium and sodium hypophosphites and 2½ gr. of citric acid to 1 oz. of elixir cinchonæ, N.F. For iron preparations the elixir made with Detannated Tincture of Cinchona is used. This tincture is made by shaking 8 oz. of fluid extract of cinchona with 8 oz. of freshly precipitated ferric hydrate (in the drained state), shaking well, filtering through cotton-wool, and washing the filter with proof spirit to make 16 oz. of product. Pyrophosphate of iron, in the proportion of 16 gr. to the ounce, is added to this to make elixir cinchonæ et ferri. There are also combinations with bismuth, strychnine, calcium lactophosphate, pepsin, &c., for which no demand has ever arisen in Great Britain, similar preparations being sold here as liquors. Some of the latter are really elixirs.

Elixir Cocæ

Ext. cocæ liq. sol.	℥ij.
Spt. rectificat.	℥j.
Syrup.	℥ij.
Ess. vanillæ	ʒj.
Elixir. aromat. ad	℥xvj.

Mix and after two days filter.

Elixir Eastoni *vel* Elixir Ferri, Quininæ, et Strychninæ Phosphatum

Pyrophosphate of iron	gr. 128
Pure quinine	gr. 64
Strychnine	gr. ij.
Rectified spirit	℥ij.
Syrup	℥ij.
Distilled water	℥ij.
Aromatic elixir to	℥xvj.

Dissolve the alkaloids in the spirit, add the syrup and 8 oz. of elixir. Dissolve the pyrophosphate in the water by the aid of a gentle heat, neutralising with ammonia if necessary; mix with the alkaloidal solution, and make up to 16 oz. with the elixir.

This is Caspari's form, and it makes an elegant green elixir, but the alkaloids do not exist as phosphates, which, however, is not a real objection, considering the amount of the phosphoric acid in the iron salt. The 'National Formulary' now follows this plan.

Elixir Daffyi

(Dicey's Formula)

Fol. sennæ	℥iv.
Rass. guaiac.	℥ij.
Rad. inuli	℥ij.
Sem. anisi	℥ij.
Sem. carui	℥ij.
Sem. coriandri	℥ij.
Rad. glycyrrhiz.	℥ij.
Uvæ	℥viij.
Spt. tenuior.	Oiv. ℥xvj.

Macerate fourteen days and filter.

There are many other formulas, but the above is considered to give the best imitation of the original. An extemporaneous Daffy may be made by mixing spt. anisi, ext. glycyrrh. liq. āā ʒj., tr. sennæ ad ℥ij.

Elixir Glusidi *vel* Saccharini, B.P.C.

Dissolve 8 dr. of saccharin and 4 dr. of bicarbonate of soda in 10 oz. of distilled water. Add 2½ oz. of rectified spirit. Mix, filter, and wash the filtrate with water to 20 oz.

Dose: ♏v. to ♏xx.

Elixir Digestivum

Ext. byni	℥iij.
Liq. peptici	℥iss.
Ext. cascar. sag. liq.	ʒiij.
Tr. nucis vom.	ʒiiss.
Glycerini	℥j.
Aq. chloroformi ad	℥xij.

M.

Dose : Two tablespoonfuls after each meal for flatulent dyspepsia.

Note.—Not suitable for a stock remedy, as it does not keep well.

Elixir de Goudron or Tar Elixir

Wood tar	℥j.
Powdered sugar	℥iij.
Proof spirit	℥xx.

Mix the tar and sugar in a mortar, add the spirit, and when the sugar is dissolved filter.

See also 'Elixir Picis Co.'

Godfrey's Cordial

Most of the recipes for this preparation are not very workable, but the following one, which is a modification of an unofficial American formula, has the advantage of being definite and easily compounded :—

Oil of sassafras	ʒss.
Oil of peppermint	ʒss.
Carbonate of magnesia	ʒiij.

Rub together in a mortar for ten minutes, then triturate with 8 oz. of warm water, and pour into a bottle containing

Brandy	℥vj.
Warm water	℥xiv.
Bicarbonate of soda	ʒviij.

Shake well, and when cold filter and add

Treacle	℥xvj.
Sedative solution of opium	ʒvj.

Make up to 44 oz. with peppermint water.

Each fluid drachm of the preparation contains 1 minim of the solution of opium. For children under a year old the cordial should be coloured with extract of liquorice and diluted with three times its volume of thin syrup.

Elixir Guaranæ, B.P.C.

Powdered guarana	℥iv.
Light magnesia	℥ss.
Oil of cinnamon	♏vj.
Syrup	℥ij.
Alcohol (60 p.c.)	a sufficiency

Mix the powders, damp with 3 oz. of the alcohol, and after twenty-four hours' maceration mix with 8 oz. of sand and pack in a percolator (not a glass one, as they sometimes crack). Percolate 16 oz., then press out as much liquid as possible from the marc, mix with the 16 oz., filter, add the syrup and oil, and make up to 20 oz. with the alcohol.

Elixir Ipecacuanhæ

(*substitute for Vin. Ipecac.*)

Ext. ipecac. liq.	℥j.
Elixir. simplicis	℥j.
Spt. rectificat.	℥j.
Glycerini	℥v.
Aq. ad	℥xx.

Mix, and after three days filter.

Elixir Kola

Powdered kola	℥ij.
Glycerine	ʒxiv.
Rectified spirit	ʒx.
Cinnamon water	℥vj.
Essence of vanilla	ʒj.
Tincture of orange	℥j.

Macerate for a week, and filter. More essence of vanilla may be added if desired.

Elixir Lactophosphat. Co.

Calcii lactatis	ʒij.
Ac. phosph. (sp. gr. 1·500)	ʒij.
Aq.	℥j.
Syr. ferri phosph.	℥ij.
Elixir. simplicis ad	℥xvj.

Dissolve the lactate in the acid and water, add the syrup and the elixir, and filter.

Elixir Paraldehyd
(Martindale)

Paraldehyd.	℥ss.
Glycerini	℥ss.
Spt. rectificat	℥j.
Ol. cinnamom.	♏iv.
Ol. aurantii	♏viij.
Saccharini	gr. j.

Dissolve the paraldehyde, saccharin, and oils in the spirit, and add the glycerine.

Dose : ʒj. to ʒiij.

Elixir Pectoral

Ext. glycyrrhizæ	℥ss.
Pulv. acaciæ	℥ss.
Tr. camph. co.	℥ij.
Spt. ætheris nitrosi	℥ij.
Vin. antimonialis	℥j.
Ext. pruni virg. liq.	℥j.
Aq. destillat.	℥iv.
Elixir. aromat. ad	℥xvj.

Mix the liquorice and gum with the water, add the fluid extract, then the rest of the ingredients in their order. Set aside for a few days and filter.

There are many other pectoral elixirs, but the above, which is given 'ʒj. t.d.,' is one of the best.

Elixir Pepsin, N.F.

Scale pepsin	gr. 128
Hydrochloric acid	ʒss.
Glycerine	℥ij.
Compound elixir of taraxacum	℥j.
Rectified spirit	℥iij.
Sugar (troy)	℥iv.
French chalk	ʒij.
Water to	℥xvj.

Dissolve the pepsin in a mixture of the glycerine, acid, and 6 oz. of water, then add the other ingredients except the sugar, and shake well. Filter, dissolve the sugar in the filtrate, and wash the filter with water to make 16 oz.

Elixir Pepsin et Bismuthi

Scale pepsin	gr. 64
Distilled water	℥iv.
Glycerine	℥ij.
Caramel	♏iv.
Glycerite of tartarated bismuth	℥ij.
Aromatic elixir	℥viij.

Dissolve the pepsin in 1 oz. each of glycerine and water and add the rest of the ingredients.

If a combination with strychnine is desired, dissolve strychnine, 2 gr., and tartaric acid, 2 gr., in 2½ oz. of the water, and mix with the other fluids before adding to the pepsin solution.

Elixir Pepto-lactic

Acid. hydrochlor.	ʒij.
Pulv. pepsin. sacch., U.S.P.	℥viij.
Acid. lact. conc.	ʒij.
Elix. aromat.	℥cxij.
Liq. carmin., N.F.	q.s.

M.S.A.

Elixir of Peptone

Beef peptone	ʒv.
Sugar	℥iss.
Rectified spirit	℥j.
Port wine	℥iv.
Water	℥ij.

Dissolve the peptone in the water, add the sugar and the wine, and, when the sugar is dissolved, the spirit.

Elixir Picis Compositum, N.F.

Syrup of wild cherry	℥iij.
Syrup of tolu	℥iij.
Sulphate of morphine	gr. iiss.
Methylic alcohol	ʒvj.
Hot water	ʒj.
Wine of tar to	℥xvj.

Dissolve the morphine in the water and add to the syrups, then add the other ingredients.

A favourite cough remedy in the United States.

Dose : ʒj.

Elixir Phosphori

I. B.P.C.

Tr. phosphori co.	℥iv.
Glycerini	℥xvj.

M.

Should be made as required.

Dose: ♏xv. (= $\frac{1}{200}$ gr.) to ʒj. (= $\frac{1}{50}$ gr.).

II. U.S.P.

Spt. phosphori	℥iij. ʒvj.
Ol. anisi stellat.	♏xvj.
Glycerini	℥ix.

Shake until clear, then add gradually

Elixir. aromat. ad	℥xvj.

Shake after each addition of elixir.

ʒj. = Phosphorus gr. $\frac{1}{50}$.

Elixir Potassii Bromidi

Potass. bromid.	ʒxliv.
Acid. citric.	ʒj.
Elix. aromat. ad	℥xxxij.

Dissolve and filter.

Elixir Rhamni Purshianæ

See 'Elix. Casc. Sagrad.'

Elixir Rubrum (Martindale)

Solution of carmine	ʒj.
Simple elixir to	℥viij.

Mix.

'Not compatible with acids.'

Elixir Rhei, B.P.C.

Rhubarb in No. 12 powder	℥v.
Bruised fennel	℥ij.
Glycerine	℥iij.
Sugar	℥iv.
Rectified spirit, 1 vol. Water, 3 vol.	q.s.

Make 15 oz. of tincture from rhubarb and fennel by double maceration with the dilute spirit. After allowing the mixed expressed liquor to stand two or three days, filter, dissolve the sugar and glycerine in the filtrate, and make up to 20 oz. with the dilute spirit.

Dose: ʒj. to ʒiij.

Elixir Sennæ, B.P.C.

Alexandrian senna	℥xvj.
Rectified spirit	a sufficiency
Distilled water	a sufficiency
Sugar	℥xij.

Moisten the senna with a mixture of spirit, 4 oz., and water, 12 oz. Pack in a jar and macerate three days; then press out the liquor and put it on the sugar. Repeat the maceration with another 16 oz. of menstruum and express after twenty-four hours. Add to the sugar, and heat the whole in a closed vessel on a water-bath to 200° F. for ten minutes. Strain when cold and add the following, previously mixed:—

Chloroform	♏xxiv.
Oil of coriander	♏iiss.
Tincture of capsicum	ʒss.
Rectified spirit	℥iij.

Should measure 24 oz. If not, make up with proof spirit.

Dose: ʒj. to ʒiij.

Elixir Stoughtoni

(syn. *Tr. Absinthii Co.*, *Codex; Man's Friend: Stomachic Elixir, &c.*)

Gentian	lb. viij.
Serpentary	lb. iss.
Bitter-orange peel	lb. vj.
Safflower	lb. iss.
Red sanderswood	lb. iss.
Proof spirit	Cong. x.

Make a tincture by maceration.

This is still a favourite on the Continent, but there wormwood lb. ivss., aloes ℥x., and rhubarb ℥xx. are included, and cascarilla takes the place of serpentary.

Elixir Simplex, Ex-B.P.C.

Oil of bitter orange	ʒss.
Rectified spirit	℥vj.
Cinnamon-water	℥vij.
Syrup	℥vij.

Dissolve the oil in the spirit, add the other liquids, and filter through paper moistened with proof spirit and sprinkled with kaolin.

Elixir Sodii Bromidi, N.F.

Made with sodium bromide of the same strength as elix. pot. brom.

Elixir Taraxaci Compositum, N.F.

Fluid extract of taraxacum	ʒvij.
Fluid extract of wild-cherry bark	℥ss.
Fluid extract of sweet-orange peel	℥ss.
Fluid extract of liquorice	℥iss.
Tincture of cinnamon	ʒvij.
Compound tincture of cardamoms	ʒvj.
Aromatic elixir	℥xv.

Mix, and after a few days filter.

Used to cover the bitter taste of such medicines as quinine.

Elixir pro Tussis

(Tonic)

Syr. simpl.	℥xx.
Ext. pruni virginian. liq.	℥vj.
Liq. morphiæ hydrochlor.	℥iv.
Vin. ipecac.	℥iv.
Potass. chlorat.	℥iij.
Spt. chloroform.	℥vj.
Aq. ad	Ovij.

Mix, and filter bright.

Dose: From ʒj. to ℥ss., according to age, &c.

May be put up in 6-oz. bottles, selling at a reasonable price with good profit.

(Wild Cherry)

Cort. pruni virg.	℥iv.
Aq. destill. ad	℥xvj.

Infuse for twenty-four hours, strain, then add

Vin. ipecac.	℥ss.
Liq. cocci	q.s.
Spt. chloroform.	℥ij.
Syrup. scillæ ad	℥xxxij.

M.

Dose same as the last.

2-oz. panelled bottles, 1*s.* 1½*d.* 6-oz., 2*s.* 9*d.*

Embrocation, Roche's

This celebrated speciality is the subject of letters patent granted on May 23, 1803, and was prepared thus:—

'Take

Oil of elder	1	gallon
Red rose-leaves	2	oz.
Camomile flowers	2	oz.
Oil of caraways	3	oz.
Oil of rosemary	½	oz.
Powder of cochineal	6	grains
Alkanet root	2	oz.

'Which several articles or ingredients must be put in an earthen or other vessel and simmered over a slow fire for the space or time of twenty-four hours, and then pressed and strained through a sieve of fine hair or linen, and the liquid produced therefrom will be fit for use.'

A quantity suited to the age of the patient is to be rubbed into the pit of the stomach the last thing before going to bed, and the stomach is to be covered with a piece of fine flannel to be worn all night and exchanged for another piece by day. Quantity.—Under six months, ⅓ teaspoonful; six to twelve months, ½; one to two years, a teaspoonful; above two years, 1½ teaspoonful; for an adult, 2 teaspoonfuls.

The traditional imitation is :—

Olei succini . . .	℥ss.
Olei caryophylli . .	℥ss.
Olei olivæ . . .	℥j.

M.

Emp. Belladonnæ Virid., B.P.C.

Made with alcoholic extract of belladonna-leaf (as much as contains 11 gr. of alkaloids) and resin plaster sufficient to produce 10 oz. of the finished plaster.

Emplastrum Capsici

The U.S.P. directs this to be made by brushing adhesive plaster (emp. resinæ on calico) with oleo-resin of capsicin, leaving a margin all round. Each square inch should have about a grain of the oleo-resin upon it.

Emplast. Dale

Red-lead . . .	lb. vj.
Sweet oil . . .	lb. xij.

Boil to a proper consistency, then add

Resin	lb. iij.
Yellow wax . . .	lb. iij.

Melt, mix, and make into $\frac{3}{4}$ oz. rolls.

Originated by the late Miss Dale, of Newcastle-on-Tyne.

Emulsio Adipis (Martindale)

Prepared lard . . .	℥xv.
Boiling distilled water .	℥xxx.
Powdered tragacanth .	ʒv.
Essential oil of almonds .	♏xv.

Melt the lard, add the tragacanth, and mix. Then pour in the boiling water, and stir with a whisk till nearly cold. Add the flavour and mix.

Dose : ʒj. to ʒiij. with rum and milk as a substitute for pancreatic emulsion.

Emulsio Chloroformi, N.F.

Chloroform. . . .	♏xl.
Tr. quillaiæ . . .	ʒss.
Pulv. acaciæ . . .	gr. xij.
Aq. ad	℥ij.

Put the chloroform and tincture in a bottle, add the acacia, and shake ; then add the water, and mix.

Emulsio Copaibæ

Copaibæ . . .	℥j.
Pulv. acaciæ . . .	℥ss.
Syrup.	℥j.
Ol. menthæ pip. . .	♏viij.
Aq. destillat. ad . .	℥viij.

Triturate the gum with an ounce of water, add the oil, and stir ; then the copaiba gradually, diligently stirring until the whole is incorporated ; then add the water and the syrup.

Dose : A tablespoonful.

NOTE. — Additional medicines should be mixed with the second lot of water.

Emulsio Iodoformi

For injection mix ʒiss. of finely powdered iodoform with 2 oz. of fresh starch paste (5 gr. to 1 oz.).

For external application use pulv. tragac. co. gr. j. and glycerin. ♏ij. for every 5 gr. of iodoform, with sufficient water.

EMULSIO OLEI MORRHUÆ

Cod-liver oil has been, since its introduction about half a century ago, a veritable will-o'-the-wisp to pharmacists, as succeeding generations of them have endeavoured to make it 'palatable.' The hunt commenced when the oil was brown, rank, and abhorrently fishy, and it is a tribute to the solid conservatism of pharmacy that we treat the almost tasteless pale oil as if it were as nasty as its precursor. Still, the pale oil was in general use long before cod-liver oil emulsions came on the field. That was about the year 1870, as near as we can trace. A year before that the author of the delightful 'Carols of Cockayne' expressed the highest point to which the elegant pharmacy of cod-liver oil had reached when he sang—

> 'In the course of my lifetime I've swallowed enough
> To have floated a ship of the line,
> And it's purely the fault of the horrible stuff
> That I've ceased to enjoy ginger wine.
> For how can you wonder to see me recoil
> From a liquor I mix'd with my cod-liver oil?'

Since those days emulsions of the medicine have displaced old-fashioned jellies, and formulas for the preparation have been produced at an alarming rate. Fortunately for us the majority of these formulas have become antiquated, and many more of them are so obviously the concoctions of faddists that if we confine ourselves to those representing the requirements of the present time we shall satisfy all needs.

The characteristics of a good cod-liver oil emulsion may be summed up in three sentences: first, it should be an inseparable mixture of about 50 per cent. of the oil; second, it should keep when bottled for at least six months; and, third, it should be pourable and pleasant to the taste. It is not easy to get all these characteristics together, the second being the most difficult to secure. The principal precaution to observe is that the water used should be recently boiled, and if sugar is a component of the emulsion, a preservative, such as salicylic acid, should be added, especially if the flavouring oils are not strongly antiseptic. Chloroform is equally suitable in the proportion of a minim to the ounce. It also acts as a good 'covering.' The following are suitable Flavouring Oils, to be used in the proportion of a minim to each ounce of emulsion.

I

Ol. gaultheriæ	ʒv.
Ol. sassafras	ʒv.
Ol. amygdal. essent.	ʒj.

M.

II

Ol. amygdal. essent.	ʒiss.
Ol. myristicæ	ʒij.
Ol. cinnamom. ver.	ʒij.
Ol. neroli	♏xx.

M.

III

Ol. neroli	ʒiij.
Ol. amygdal. essent.	ʒiij.
Ol. caryoph.	ʒss.

M.

IV

Ess. amygd. amar. (1 in 20)	ʒj.
Ol. caryophylli	♏xx.
Ess. vanillæ	ʒss.

M.

It is not possible to give more than typical examples of the respective methods of making the emulsion, and we begin with a formula which, as 'Cremor Morrhuæ,' was originally published in *The Chemist and Druggist*, and has with slight modification been adopted by the B.P.C. The emulsion keeps well throughout the winter months, especially if it is put up in recently scalded bottles :—

Egg Emulsion

Cod-liver oil	℥vj.
The yolk of one egg.	
Powdered tragacanth	gr. x.
Elixir of saccharin	ʒss.
Simple tincture of benzoin	♏xlv.
Spirit of chloroform	ʒiij.
Flavouring oils	♏xij.
Distilled water to	℥xij.

Measure 4 oz. of the distilled water, place the tragacanth in a dry mortar, and triturate with a little of the cod-liver oil ; then add the yolk of egg and stir briskly, adding water as the mixture thickens. When of a suitable consistence, add the remainder of the oil and water alternately, with constant stirring, avoiding frothing. Transfer to a pint bottle, add the elixir of saccharin, tincture of benzoin, spirit of chloroform, and oils, previously mixed ; shake well, and add distilled water, if necessary, to make 12 oz.

COMBINATIONS

With Hypophosphites : Add to each 12 oz. 48 gr. each of the hypophosphites of soda and lime dissolved in the water.

With Eucalyptus : Add to the 12 oz. ʒss. to ʒj. of eucalyptol instead of the flavouring oils.

With Phosphorus : Mix with each ounce of cod-liver oil ♏v. of ol. phosphorat., B.P.

With Pancreatin : Mix with the water for 12 oz. of emulsion zymine ʒss. and sodæ bicarb. ʒiiss.

Phosphatic : Add acid. phos. dil. ʒij. to the 12 oz. of emulsion, substituting rum ℥j. for the spt. chloroformi.

Similar medication to the foregoing may be applied to emulsions made by the other methods given on the following pages.

Acacia Emulsion

Cod-liver oil	℥iv.
Powdered gum acacia	℥j.
Saccharin elixir	ʒss.
Flavouring oils	♏viij.
Distilled water to	℥viij.

Mix the oils in a mortar with the gum, add 2 oz. of water and the elixir, and triturate briskly but lightly until an emulsion is formed; then add the rest of the water in portions with diligent stirring.

NOTE.—Some prefer to make the gum into a mucilage with 2 oz. of water, and gradually add the oil to it, with trituration. We prefer the method described, but this is greatly a matter of habit.

Acacia and Tragacanth Emulsion

Pulv. acaciæ	ʒiij.
Pulv. tragacanth.	ʒiij.
Pulv. amyli	ʒiij.
Ol. morrhuæ	℥xxiv.

Mix well and add gradually

Aquæ	℥xvj.

Emulsify, then mix in

Syrup.	℥vj.
Ol. amygdal. ess.	♏xx.

This should have added to it acid. salicylic. ʒss., dissolved in spt. chlorof. ʒss.

Acacia Emulsions, when carefully made, are undoubtedly the best, and keep longest. They do not separate if perfectly formed at first. This is not a difficult matter when such quantities as a pint or two are made in a mortar; but on the large scale such embryonic manipulation is inadmissible. A mixing-machine, on the paddle-churn principle, should in these cases be used, and emulsification started with the assistance of a little lime-water. There is a strong prejudice amongst pharmacists against using lime-water for aiding the emulsification of cod-liver oil, because it is generally assumed that the emulsion is a soap. This is erroneous: not more than a couple of grains of soap is formed by an ounce of lime-water, and that little goes a long way in aiding emulsification of the oil. The principal reason for using lime-water, however, is that cod-liver oil generally contains a small proportion of hydroxy-acids, which, according to Möller and Heyerdahl, are the cause of the objectionable eructation following the administration of cod-liver oil, and the lime fixes these, greatly reducing the tendency to eructations also improving the taste somewhat. The best proportion of lime-water to use is 1 part for every 4 parts of oil, reducing plain water accordingly.

Tragacanth Emulsions are not so popular as they were about the end of the seventies, when cod liver oil emulsion suddenly became the rage in this country because of the palatability of one made with tragacanth. Recently the acacia and tragacanth emulsion has been the favourite. The following are two ways of making the plain tragacanth emulsion. The first gives an emulsion in which the oil is in minute globules; the second, an old B.P.C. formula, is made more easily, but one can almost see the oil globules with the naked eye, although that is not a serious objection when palatability is the chief consideration :—

1

Pulv. tragacanthæ . .	ʒij.
Glycerini . . .	℥ij.
Aq. bullientis . . .	℥viij.

Mix the tragacanth with the glycerine in a large mortar, and pour the boiling water upon the mixture, stirring assiduously to form a jelly. When cold add gradually, constantly stirring, a mixture of

Ol. morrhuæ . . .	℥xxv.
Aq. calcis . . .	℥xv.

When this is all combined—and it must be done with much care—add

Elixir. saccharin. . .	℥j.
Ol. essential. . . .	ʒss.

The taste is improved by the addition of Cerebos ʒij. dissolved in 2 oz. of chloroform-water.

II

Cod-liver oil . . .	℥xl.
Powdered tragacanth .	℈x.
Simple tincture of benzoin	℥ss.
Spirit of chloroform .	℥ss.
Glycerine . . .	℥ij.
Flavouring oils . .	♏lxxx.
Distilled water to . .	℥lxxx.

Place the oil in a dry Winchester quart bottle and pour in the tragacanth, tincture of benzoin, and spirit of chloroform, previously well mixed; agitate briskly for one minute; then add all at once 1 pint of distilled water and agitate as before. Lastly add the flavouring oils, glycerine, and sufficient distilled water to produce 4 pints. Shake vigorously for a few minutes.

Dextrin Emulsion, N.F.

Prepare a mucilage of powdered white dextrin by heating 1 part of it in 2 parts of distilled water, and, when dissolved, making up the weight to 3 parts. Use this in the following :—

Cod-liver oil . . .	℥viij.
Dextrin mucilage . .	℥v.
Syrup of tolu . . .	℥ij.
Flavouring oils . .	♏xv.
Water to . . .	℥xvj.

Add the oil to the mucilage in small quantities at a time, mixing thoroughly, then add the flavouring, syrup, and water to the required quantity.

Irish Moss Emulsion

Chond. crisp. . . .	ʒj.
Aquæ	℥vj.

Soak for an hour, then make a decoction by the heat of a water-bath and strain 5 oz. Add

Glycerini . . .	℥ij.
Spt. rectificat. . .	℥j.
Ol. amygd. essent. . .	gtt. v.
Ol cinnamom. . .	gtt. iij.

Mix, and after twelve hours add in three portions

Ol. morrhuæ . . .	℥viij.

Shake well after each addition to make an emulsion.

Other forms of cod-liver oil emulsion have been from time to time proposed, or actually adopted, by such semi-official publications as the 'National Formulary.' Notable amongst them are emulsions made with saponin-containing drugs such as quillaia and senega. It is reckoned that 1 dr. of tincture of quillaia will emulsify 1 oz. of cod-liver oil. Thus, to make 16 oz. of emulsion, put an ounce of the tincture into a pint bottle and add 8 oz. of the oil (2 oz. at a time), shaking well after each addition; then add elixir of saccharin 1 dr., or tolu syrup 2 oz., and water to 16 oz., with a sufficiency of flavouring. The product is suitable for extemporaneous dispensing only. Another so-called emulsifier is condensed milk, which plays a part similar to malt extract in malt and oil. To make it, mix cod-liver oil with half its weight of condensed milk; then add a mixture of glycerine and water to make the whole double the volume of oil used; flavour suitably.

Cod-liver oil emulsions have not become so popular on the European continent as in England. Some attention has, however, been given to them there, chiefly with respect to flavours, and the following formulas show what can be done on the continental plan :—

I

Cod-liver oil . . .	℥xvj.
Icing sugar . . .	℥vj.
Powdered gum arabic .	℈iv.
Powdered tragacanth .	ʒiss.
Cold-coffee infusion .	℥vij.
Rum	℥iv.

Mix the sugar and gums in a mortar. Shake the oil and coffee in a bottle, and add as much of this to the mortar contents as will make the powder into a plastic, semi-liquid paste on stirring; then put in some of the rum and of the oil mixture *secundum artem* until the emulsion is complete.

II

Cod-liver oil . . .	℥xvj.
Oil of bitter almonds .	gtt. xx.
Oil of wintergreen . .	gtt. xx.
Icing-sugar . . .	℥vj.
Powdered gum arabic .	℈iv.
Powdered tragacanth .	℈iv.
Distilled water . .	℥viij.
Hypophosphite of lime .	ʒiiss.
Hypophosphite of soda .	gr. 75

Mix the oils and proceed as in the foregoing formula.

Oil emulsions generally, *e.g.* Emulsio Ol. Ricini, may be made in the same way as the acacia emulsion of cod-liver oil, but in the case of castor oil flavours which are also used in cooking should be avoided. Ol. menth. pip. is best for castor oil, and as the latter is only called for in draughts as required, the following method of making it can be recommended:— Into a $1\frac{1}{2}$ oz. phial put aq. menth. pip. ʒij., spt. ammon. arom. ʒj., and ol. ricini ℥ss. Hold the phial in the palm of the hand for a few minutes to thin the oil, cork, and shake briskly until the mixture is uniformly white. Then add elixir. saccharin. ♏v. and aq. menth. pip. ʒiij. Again mix. This draught, taken on an empty stomach, acts as an efficient purge for an adult.

Pancreatic Emulsion was devised in 1863 by Dr. Horace Dobell, who communicated his method of making it to the Royal Society in 1868. The process is one requiring experience as well as care in doing it, and although pancreatic emulsion is not a secret preparation, the manufacture of it has remained almost exclusively in Messrs. Savory & Moore's hands for more than thirty years, chiefly because they have mastered the details of the process, and it is not worth anybody else's while to follow them. We state the process generally, and refer those requiring fuller details to the *Proceedings of the Royal Society*, No. 97, where Dr. Dobell's paper is printed, and to an interesting essay by him in *The Chemist and Druggist* of January 14, 1888. Also to the paper by Mr. Richard V. Matison in the *American Journal of Pharmacy*, 1873, and the *Year Book of Pharmacy*, 1874, page 364, where the working details are precisely and fully stated. The first stage in making the emulsion is to take 25 lbs. of clean fat-free pig's pancreas, chop it, and mix with 20 lbs. of lard, beating them well together, and gradually working in 3 gals. of water. Squeeze the emulsion through a suitable cotton strainer. Then mix the strained liquid with three times its volume of ether, and allow to stand for two days, when the whole of the ether has separated and risen to the surface. Decant it and recover the ether by distillation. The residue is pancreatised fat. To make the emulsion mix 2 parts of this fat with a mixture of rectified spirit 1 part and water 3 parts, and flavour with oil of cloves.

Petroleum Emulsion was introduced as a substitute for cod-liver oil and its preparations. It is made from a refined, neutral, inodorous, colourless, and tasteless liquid paraffin. Thus the B.P.C. Formulary directs 8 oz. of liquid paraffin, 4 oz. of powdered acacia, 2 dr. of powdered tragacanth, and 24 minims of cinnamon oil to be well mixed in a mortar, then add 6 oz. of water all at once, and stir until emulsified. Make up to 24 oz. with water. Sodium and calcium hypophosphites are added in the proportion of 8 gr. of each to the ounce, being dissolved in the diluting water. Dose: ʒj. to ʒiv. This is an improvement on the formula given in the earlier editions of this book, although on the same lines.

Ergotin (Bonjean's).—The method communicated to the French Academy of Sciences in 1843 is as follows:—'Exhaust powdered ergot with cold water by displacement; heat the liquor to boiling-point, and, if there is a coagulum of albumen, filter; evaporate the filtrate on a water-bath to syrupy consistence; to this add a large excess of alcohol in order to precipitate gummy matter; allow the mixture to stand until the flocculence subsides; decant the clear liquor and evaporate to the consistence of a soft extract.' A better product is obtained by adding 1 per cent. of B.P. acetic acid to the water used for exhausting the drug. The acid is dissipated on evaporation. Otherwise the process stands as above.

Essence, Composition

Composition powder	℥xvj.
Proof spirit	℥xx.
Glycerine	℥v.
Water	℥x.

Macerate for four days and press out the liquor. Mix the marc with a pint of water, and again press. Mix the liquors, and reserve. Boil the marc in half a gallon of water, containing potass. carb. ʒij., for ten minutes, and strain 2 pints; when cold add this decoction to the reserve with 3 oz. of rectified spirit and water to 80 oz. Filter.

Essentia Episcopalis

(syn. *Bischof's Extrakt*)

Tincture of fresh orange-peel	℥vij.
Cherry-laurel water	♏ 80
Tincture of cinnamon	♏ 80
Orange-flower water	℥x.
Rectified spirit to	℥xxviij.

Allow to stand for a few days, and filter.

To make 'Bischof's Drink' a teaspoonful of this is added to a quart of water in which about 4 oz. of sugar has been dissolved.

Essence, American

(syn. *Indian Brandy, or Brandee*)

Spirit of nitre	℥iv.
Tincture of rhubarb	℥iv.
Simple syrup	℥j.

Mix.

Small shopkeepers sell such a preparation as the following :—

Spirit of nitrous ether	℥ij.
Spirit of chloroform	℥j.
Water	℥iv.
Caramel	a sufficiency
Simple syrup to	Oj.

Mix.

The sale of the latter article without a sweets-licence is illegal.

Essence, Cambrian

(syn. *Essence of Smoke, Westphalian Essence*)

Rectified spirit of tar	℥ij.
Wood naphtha	℥iv.

Mix and add to

Crude pyroligneous acid	℥xx.

Shake and filter through a filter wetted with the acid. Colour with caramel.

NOTE.—Should be sent out clear.

Essentz, Kronen

(*Crown Essence*)

Rad. angelicæ	1,500 grammes
Rad. zedoariæ	1,500 grammes
Rad. tormentillæ	1,000 grammes
Rad. diptamin.	1,000 grammes
Herb. cardui benedict.	3,000 grammes
Succi glycyrrhiz.	6,000 grammes
Camphor.	500 grammes
Aloes	6,000 grammes
Theriac. venet.	1,500 grammes
Rad. gentianæ	1,000 grammes
Agaric. alb.	750 grammes
Myrrh.	2,000 grammes
Spt. rectificat.	200 kilos.

Macerate for fourteen days and filter.

Essentia Sinapis

(Similar to *Whitehead's Essence of Mustard*)

Camphor.	℥ij.
Ol. rosmarini	ʒij.
Ol. sinapis essent.	ʒj.
Pastæ Bixæ	ʒj.
Ol. terebinthin. ad	℥x.

Rub down the annatto with a little of the turpentine, add to the rest of the ingredients, and filter.

Essence of Linseed, Compound (Kay's).—This is the subject of British letters patent (A.D. 1873, No. 1,975) granted to Samuel Kay and Thomas Kay, of Stockport, who stated in their complete specification that they 'make an improved medicinal compound which contains concentrated within it fluid extract of senega, scilla, papaver, marrubium, chiretta, or other tonic bitter, and we add ipecacuanha, or antimonii tartras, or both, in wine, in the approved officinal proportions ; we emulsify the clear liquid with linseed, "linum usitatissimum," by decoction in steam-jacketed pans or otherwise. The strained product is then further medicated with a distillate of pimpinella, anisum, laurocerasus, tolinfera (*sic*) balsamum, storax, benzoin, æther sulphuricus et chloricus, with sufficient mucilage aided by powerful agitators to produce a complete and homogeneous mixture, which contains the demulcent properties of linseed, combined with the cordial, balsamic, soothing, strengthening, and expectorating properties of the above medicines in a portable and convenient form. We call this "Compound Essence of Linseed."'

Essentia Tamarindi Co.

Purified tamarind pulp .	℥x.
Alexandrian senna (deprived of resin with spirit)	℥iss.
Boiling water . . .	Oiij.

Infuse for twelve hours and strain. Evaporate the strained liquor to 22 oz. (by weight). Take 14 oz. of the residue and neutralise with soda solution; then add

Rectified spirit . .	℥iv.
Syrup	℥ij.
Essence of vanilla . .	ʒiss.

Add the rest of the liquor, set aside for about a week, decant the clear and filter the 'foots.'

Dose: A teaspoonful or more according to age and effect.

NOTE.—Ess. tamar. co. is a pleasant aperient syrup for children and others. The Supplement to the German Pharmacopœia has an ess. tamarindorum made as follows:—Treat 500 parts of tamarinds with 2,500 parts of water, and after standing a few hours strain through a hair sieve, without pressure, 1,000 parts. Neutralise with 3 or 4 parts of magnesia carbonate. Separately infuse 50 parts of Alexandrian senna and 2 parts of calcined magnesia in 500 parts of water for twenty-four hours. Strain without pressure, mix with the tamarind liquor, and evaporate to 800 parts (by weight). When cold add 50 parts each of simple syrup, syrup of orange, syrup of cinnamon, and proof spirit (all by weight). Filter.

Essence, Witch Hazel.

A distillate from a maceration of the fresh twigs and leaves of *Hamamelis virginica*, to which 3 per cent. of alcohol is added immediately after distillation, and another 9 per cent. a month later. Should be perfectly bright and free from decomposition products. The 'National Formulary,' however, directs 10 parts of shoots and twigs, 20 parts of water, and 1½ part of rectified spirit to be macerated for a day, and 10 parts of the maceration to be distilled. It is called 'aqua hamamelidis spirituosa.' The essence is made in certain suitable districts of the United States. Pond's Extract, hazeline, and other similar preparations are distillates of fresh witch hazel.

EXTRACTA

It is impossible to enter into full consideration of the manufacture of extracts and fluid extracts in this book; but as several formulas must be given, we quote here the American and English directions for percolation—the method generally followed in the manufacture of fluid extracts.

English

Moisten the drug (20 oz.) with 8 fl. oz. of the menstruum, pack it tightly in a percolator, and pour on sufficient menstruum to saturate the powder and leave a stratum above it. When the liquid begins to drop, close the lower orifice and macerate for twenty-four hours; then allow percolation to proceed, gradually adding menstruum until the drug is exhausted. Reserve the first 17 fl. oz. of the percolate, distil off the spirit from the remainder, and evaporate the residue to a soft extract; dissolve this in the reserved portion and add enough menstruum to make the liquid extract measure 1 pint.

NOTE.—By adopting the process of repercolation evaporation of the second portion may be avoided.

American

Moisten the drug (100 grammes) with 35 c.c. of the menstruum, pack it firmly in a cylindrical percolator, and pour on the remainder (40 c.c.) of the menstruum. When the liquid begins to drop from the percolator, close the lower orifice, and having closely covered the percolator macerate for twenty-four hours. Then allow the percolation to proceed, and when the liquid in the percolator has disappeared from the surface, gradually pour on more menstruum and continue the percolation until the drug is exhausted. Reserve the first 75 c.c. of the percolate, and evaporate the remainder to a soft extract; dissolve this in the reserved portion, and add enough of the menstruum to make the fluid extract measure 100 c.c.

If there is glycerine in the menstruum it must be put in the first portion used. In the following table we give the briefest details of fluid extracts sometimes wanted:—

Table of Menstrua for Fluid Extracts (1 *in* 1).

Names of Drugs	S = Rectified Spirit W = Water G = Glycerine
Adonis vernalis	S entirely.
Aletris farinosa	S 1. W 1.
Apium graveolens	S 2. W 1.
Apocynum cannabinum	S 13. W 5. G 2.
Aralia racemosa	S 2. W 1.
Asclepias tuberosa	S 4. W 5.
Aspidosperma quebracho	S 1. W 1.
Berberis vulgaris	S 3. W 2.
Boldo (Peumus boldus)	S 2. W 1.
Calendula flor.	S 2. W 1.
Camellia Thea	S 12. W 4. G 1.
Cannabis indica	S entirely.
Castanea vesca	S 1. W 2.
Caulophyllum thalictroides	S 3. W 1.
Coffea	S 2. W 3.
Collinsonia canadensis	S 4. W 5.
Conii, B.P.C. (with acetic acid)	S 5. W 4.
Convallaria majalis	S 1. W 1.
Coptis trifolia	S 1. W 2.

Names of Drugs	S = Rectified Spirit W = Water G = Glycerine
Cornus florida	S 1. W 1.
Corydalis formosa	S 5. W 4.
Coto	S 6. W 3. G 1.
Damiana	S 2. W 1.
Digitalis	S 2. W 1.
Eriodictyon californicum	S 3. W 1.
Eucalyptus gum, B.P.C. (1 in 5)	S 2. W to 20.
Euonymus	S 1. W 1.
Eupatorium perfoliatum	S 1. W 1.
Fucus vesiculosus, B.P.C.	S 1. W 1.
Geranium maculatum	S 1. W 2.
Gossypium herbaceum, U.S.P.	S 3. G 1.
Guarana	S 3. W 1.
Hæmatoxylon Campeachianum, B.P.C.	W by decoction.
Helianthemum	S 1. W 1.
Hydrangea arborescens	S 3. W 2.
Hydrastis canadensis	S 6. W 3. G 1.
Iris versicolor	S 3. W 4.
Jambul (Eugenia Jambolana)	S 1. W 1.
Juglans cinerea (leaves or nuts)	S 1. W 1.
Kava (Piper methysticum)	S 3. W 2.
Kola (Sterculia acuminata), B.P.C.	S 1. W 1.
Lappa off.	S entirely.
Leptandra virginica	S 3. W 1.
Maidis stigmata	S 1. W 1.
Phytolacca decandra	S 4. W 5.
Pichi	S 1. W 1.
Piscidia erythrina	S 2. W 1.
Prunus virginiana	S 3. W 6. G 1.
Rhus aromatica	S 1. W 1.
Rhus glabra	S 4. W 5. G 1.
Rumex crispus	S 1. W 1.
Salix nigra	S 2. W 1.
Sanguinaria canadensis	S 1. W 1.
Scoparius	S 2. W 1.
Scopola carniolica	S 4. W 1.
Senna legumin., B.P.C.	S 1. W 2.
Spigelia anthelmia	S 1. W 2.
Stillingia sylvatica	S 2. W 1.
Thuja occidentalis	S 2. W 1.
Trillium erectum	S 3. W 2.
Ustilago Maidis	S 1. W 1.
Veratrum viride	S only.
Verbascum Thapsus	S 1. W 1.
Viburnum prunifolium	S 2. W 1.
Vinca major	S 1. W 1.
Xanthoxylum fraxineum	S entirely.
Yerba santa	S 4. W 1.

Ext. Belladonnæ Fol. Alcohol., B.P.C.

A solid extract made by exhausting belladonna-leaf in No. 60 powder, with rectified spirit, by percolation, recovering the spirit by distillation, and evaporating the residue over a water-bath to the consistence of an extract.

Extract. Cinchonæ Liq. (De Vrij)

Red cinchona-bark .	100 parts
Normal hydrochloric acid	38 parts
Glycerine . . .	20 parts
Water	362 parts

Macerate the bark in the acid and water for twelve hours, then add the glycerine and transfer to a percolator. When percolation ceases continue it with water to exhaustion and evaporate the percolate to 100 parts.

Extract. Cascar. Sagrad. Liquidum (Miscible)

(Mr. John Moss's Process)

Cascara sagrada, one year old, in No. 20 powder .	℥xvj.
Rectified spirit . .	℥iv.
Distilled water .	a sufficiency

Moisten the bark with a portion of the water; allow it to remain a few hours to soften and swell; place loosely in a percolator, and percolate with more water until exhausted. Evaporate on a water-bath to the consistency of a brittle extract, which, when cold, treat with cold water until thoroughly disintegrated. Allow this to stand and settle. Strain through flannel and evaporate the strained liquor to 12 fl. oz. Add the rectified spirit when cold.

Sp. gr. (at 60° F.) 1·050.

By the B.P.C. process: Mix 20 oz. of coarsely-powdered bark and 2 oz. of calcined magnesia into a thin paste with water. Dry and powder. Percolate with 60 p.c. alcohol to 17 oz., which reserve. Continue percolation to exhaustion, evaporate this to 3 oz., and mix with the 17 oz. Filter.

Extractum Ergotæ Dialysatum

(*Dialysed Ergotin*)

Oil-free ergot in powder .	5 parts
Distilled water . .	15 parts

Macerate for twenty-four hours, stirring occasionally; strain through a percolator and continue percolation with water until the fluid comes through almost colourless. Strain the whole of the liquid through twill and evaporate to 6 parts. Transfer this to a dialyser and continue the dialysis until no more passes through the membrane. Evaporate the liquid which has passed through the membrane on a water-bath to a thin extract.

Ext. Gavelles

This is an ingredient in Russell's prescription for the cure of obesity. We have never heard of anybody except the writer of the prescription who knows what 'Ext. Gavelles' is, and he says it is 'a preparation of marshmallow,' significantly adding: 'If there is any difficulty in obtaining it at the chemist's he will prepare it himself, as it requires great care.' The prescription is given free; the medicine, as supplied by the prescriber, costs about a sovereign.

Extract of Malt as a Vehicle.—When diastasic malt extract was originally introduced into medicine there was a large number of preparations of which it formed the basis; but the only one of these which has been used extensively is

Malt Extract and Cod-liver Oil. On the large scale this is made by simple admixture of the extract with the oil, preferably before the extract leaves the vacuum pan, as mixing must be effected at a temperature of about 100° F.—*i.e.*, when the extract is thin. On the small scale a mortar may be used, which should first be warmed well by filling with boiling water, the pestle also being warmed in the water ; pour out, dry, put the extract in the mortar, stir to liquefy it, and proceed as stated below. The second formula provides an emulsion of the extract and oil. It is a pleasant preparation.

I

Ol. amygd. essent.	♏iij.
Ol. gaultheriæ	♏iij.
Ol. caryophyll.	♏ij.
Chloroformi	♏v.
Ol. morrhuæ	℥xx.

Mix and add a little at a time to

Ext. byni	lb. v.

placed in a large mortar heated as above stated. Stir assiduously while the oil is being incorporated, and do not add any more of the oil until the last added portion is incorporated.

II. German Supplement

'Equal parts of malt extract and cod-liver oil should be slightly warmed and mixed.' Parts by volume should be taken, although the German rule is 'by weight,' but that is ridiculous in this case.

III

Powdered acacia	℥j.
Powdered tragacanth	ʒj.
Glycerine	℥iv.

Mix in a large mortar. Take also

Malt extract	℥xx.

Add about ℥iv. of this to the mixture in the mortar. Then mix

Cod-liver oil	℥x.
Saccharated solution of lime	ʒj.

Incorporate about ℥iv. of this with the contents of the mortar. Then add more extract and more oil until the whole of both has been worked in. Flavour with

Essence of vanilla	♏x.
Essence of almonds (1 in 20)	♏xx.
Oil of cloves	gtt. viij.

The late Mr. S. M. Burroughs demonstrated at the meeting of the British Pharmaceutical Conference in 1891 that malt extract is capable of taking up its own volume of castor oil by mixing as in the first method, the mixture showing no oil globules. Cod-liver oil is taken up almost to the same extent, but the above strength is more in accordance with trade practice, 20 to 25 per cent. being the usual strength. The B.P.C. Formulary now recommends the preparation to be made by heating 17 fl. oz. of the extract to 110° F., pouring into a warm mortar, and gradually adding 3 oz. of cod liver oil, constantly stirring. More than this quantity of oil can be taken up, but the 3 oz. seems to be preferred.

For medicating any of the above or plain malt extract the following may be used, the quantities indicated being for 16 fl. oz.:—

Hypophosphites.—Solution of hypophosphites (for syrup), ℥j.

Pepsin.—Ac. hydrochlor., ʒj. ; aquæ, ʒj. ; pepsin. (Fairchild), gr. xxx. glycerini ad ℥iv.

Iodide of Iron.—Solution of ferrous iodide (for syrup), ℥ij.

Pancreatised.—Zymine (Fairchild), ʒss. ; sodii bicarb., ʒss. ; aq., ʒj. glycerin. ad ℥iv.

Phosphated.—Liq. ferri phos. co. pro syrup., ℥j.

Easton's.—Liq. ferri phos. c̄ quin. et strych. pro syrup., ℥ss.

Hopped.—Tr. lupuli, B.P., ℥j.

Ferrated.—Sol. ferri pyrophosphat., ℥j.

Fletcher's liquors may be used in the foregoing formulas. On the manufacturing scale the medications are added to the malt wort before evaporation.

Extract. Sennæ Fluid. (Duncan).—In 1843 the late Professor Christison communicated the following to the *Pharmaceutical Journal*, stating that it was the fluid extract of senna devised by Mr. Duncan:—'Take 15 lb. avoir. of Tinnevelly senna and exhaust it with boiling water by displacement. About four times its weight of water is sufficient. Concentrate the infusion *in vacuo* to 10 lb.; dissolve in the product 6 lb. of treacle, previously concentrated over the vapour-bath till a little of it becomes nearly dry on cooling; add 24 fl. oz. of rectified spirit (dens. ·835), and, if necessary, add water to make 15 (16 oz.) pints. . . . The dose is 2 dr. for an adult.' This note is, we believe, chiefly of historic interest, for, whatever Duncan's extract may have been originally, it no longer tastes of treacle. As a sweet essence of senna the elixir sennæ, B.P.C., is all that can be desired.

GARGARISMATA—GARGLES

Gargarisma Acidi Tannici

Glycerini ac. tannici	ʒvj.
Glycerini puri	℥ss.
Inf. rosæ acid. conc.	ʒvj.
Spt. chloroformi	ʒiss.
Aq. ad	℥viij.

M.

Directions.—Half fill a wine-glass with the gargle, fill it up with warm water, mix, and gargle the throat with the mixture.

Tr. capsici ♏iij. to ʒj. may be added.

Gargarisma Aluminis (Squire)

Broken rose-petals	ʒiij.
Dilute sulphuric acid	ʒiij.
Distilled water	℥x.

Macerate two hours and strain 8 oz. To the liquor add

Alum	ʒij.
Sugar	ʒiv.
Rectified spirit	ʒiv.

Dissolve.

To be used with an equal bulk of water.

Gargarisma Boracis

Boracis	ʒiv.
Glycerini	℥ss.
Tr. myrrhæ	℥ss.
Aq. ad	℥x.

Rub up the borax with the glycerine, add 6 oz. of water, transfer to a bottle, pour in the tincture of myrrh, shake, and make up.

Gargarisma Chlori

Pulv. potassii chlorat.	ʒj.
Acid. hydrochloric.	♏xvj.
Aq. destillat.	℥viij.

Put the chlorate in the bottle and pour the acid upon it. Cork the bottle after a minute or so, and let the chlorine be generated. Then add the water gradually, shaking after each addition. Half an ounce of glycerine may be added.

Gargarisma Hydrargyri Perchloridi (Antisyphilitic)

Hydrarg. perchlor.	gr. iv.
Acid. hydrochlor. dil.	♏xxiv.
Glycerini	ʒij.
Aq. ad	℥viij.

S. et M.

Gargarisma Myrrhæ

Tr. myrrhæ	℥ss.
Mellis	℥ss.
Inf. rosæ acid. ad	℥x.

M.

Gargarisma Potassii Chloratis

Potassii chloratis	℥ss.
Glycerini	℥j.
Aq. ad	℥xij.

M.

Gargarisma Potassii Permanganatis

Liq. potass. permang.	ʒij.
Aq. ad	℥x.

M.

Gelanthum

(Unna)

Tragacanth	ʒiiss.
Gelatine	ʒij.
Glycerine	ʒvj.
Thymol	gr. ¼
Distilled water	a sufficiency

Put the tragacanth and gelatine in a covered jar with water 10 oz. Place in a steam-bath for twenty-four hours; press the paste through muslin, mix, add the glycerine, heat on a water-bath for an hour, and make up to 12 oz. with water in which the thymol is dissolved.

Better with tragacanth 110 gr. and powdered acacia 30 gr.

GELATINES AND JELLIES

Gelatum Acidi Acetici

(Unna)

Gelatine	℥j.
Distilled water . .	℥iiiss.
Glycerine . . .	℥v.
Glacial acetic acid . .	℥ss.

All by weight. Soak the gelatine in the water; when soft add the glycerine, dissolve by the heat of a water-bath, and add the acid. Mix.

Gelato-glycerine

(Throat Hospital Pharmacopœia)

Refined gelatine . .	℥v.
Glycerine . . .	℥vj.
Water	℥vj.

All by weight. Soak the gelatine in the water for twelve hours, stirring occasionally; add the glycerine, dissolve on a water-bath, and reduce the weight by evaporation to 15 oz.

Used as a basis for nasal bougies, each containing 40 gr. of this mass and the following medicaments:—

Bugin. Acid. Carbol.—Acid. carbolic. gr. ss.

Bugin. Bismuthi.—Bism. subnit. gr. v., glycerin. ♏iij.

Bugin. Cupri Sulph. — Cupri sulph. gr. $\frac{1}{16}$.

Bugin. Iodoform. — Iodoform. gr. ss., glycerin. ♏j.

Bugin. Morphinæ. — Morph. acet. gr. $\frac{1}{10}$.

Bugin. Pini Sylvest.—Ol. pini sylvest. ♏ss.

Bugin. Plumbi Acet.—Plumbi acet. gr. ss.

Bugin. Thymol.—Thymol gr. $\frac{1}{10}$, S.V.R. ♏ss.

Bugin. Zinci Sulph. — Zinc. sulphat. gr. $\frac{1}{16}$.

Gelato-glycerine

(Squire's Basis for Suppositories and Pessaries)

Gelatine . . .	℥j.
Water	℥j.
Glycerine . . .	℥iiiss.

Soak the gelatine in the water until it is absorbed, then add the glycerine, and dissolve by the heat of a water-bath.

Gelatum Acidi Salicylici

(Unna)

	5 p.c.	10 p.c.	20 p.c.
Gelatine .	℥j.	℥j.	℥j.
Glycerine .	℥iv.	℥ivss.	℥v.
Water . .	℥ivss.	℥iv.	℥ij.
Salicylic acid .	℥ss.	℥j.	℥ij.

All by weight. Proceed as for gelat. ac. acetic., but reserve a sufficiency of the glycerine to make the acid a thin paste, which dissolve in the warm mass.

Gelatum Chrysarobini

(Unna)

Gelatine	℥ss.
Water	℥v.
Glycerine . . .	℥ix.

All by weight. Proceed in the usual way, and evaporate to 9½ oz., then add

Chrysarobin, in fine powder	℥ss.

Mix well.

Gelatum Carrageen, Ph.G.

Irish moss . . .	℥j.
Sugar	℥ij.
Water	℥xl.

Heat the Irish moss in the water for half an hour on a water-bath, strain, add the sugar, and evaporate to 20 oz.

The 'National Formulary' has a similar preparation, 'gelatina chondri,' made by dissolving 1 part of the moss in 50 parts of water, straining, and evaporating until the gelatine can be detached from the dish in scales.

Gelatum Codeinæ et Glycerini
(Hardwick)

Codeine . . .	gr. lxxij.
Citric acid . . .	ʒxij.
Gelatine . . .	℥vj.
Glycerine . . .	℥xxxvj.
Oil of lemon . .	ʒj.
Tolutanated water .	℥xxx.

The water is made by boiling $2\frac{1}{2}$ oz. of tolu balsam in 40 oz. of water for half an hour, then straining, and making up to 32 oz. if necessary. In 25 oz. of the water soak the gelatine until soft, then add the glycerine, heat on a water-bath until dissolved, and skim. Separately dissolve the acid and codeine in 5 oz. of the water, add to the hot mass, and mix; finally add the oil, stir well, and pour into suitable bottles.

Dose: ʒj. for laryngitis and cough.

Gelatum Cocainæ

This remedy for sickness of pregnancy, &c., to be prepared in the same way as gelat. codeinæ, using cocaine hydrochlorate gr. lxxij. and citric acid ʒiij., instead of codeine and the amount of acid stated in formula.

Gelatum Copaibæ

Thick copaiba . . .	℥viij.
Powdered sugar . .	℥iv.
Clear honey . . .	℥iv.
Distilled water . .	ʒv.
Oil of peppermint . .	ʒj.
Roseine gr. $\frac{1}{10}$ dissolved in water	♏xx.

Mix the first four ingredients in a water-dish, heat gently, stirring all the time until the mixture boils; then continue to stir until a jelly is formed; cool somewhat, and add the peppermint and colouring.

This is a formula devised by Mr. Wm. Martindale in 1871. Another kind of copaiba jelly is made by melting 1 part of spermaceti in 5 parts of copaiba by heat. Still another is made with isinglass, but Mr. Martindale's is easiest made and most palatable. It contains 50 per cent. of copaiba, and may be taken in wafer paper.

Gelatum Ichthyol
(Unna)

Gelatine . . .	℥j.
Distilled water . .	℥iiss.
Glycerine . . .	℥vj
Ichthyol . . .	℥j.

All by weight. Proceed as for gel. chrysarobin.

Gelatum Iodoformi
(Unna)

	5 p.c.	10 p.c.
Gelatine . .	℥ss.	℥ss.
Water . . .	℥vij.	℥viss.
Glycerine . .	℥ij.	℥ij.
Iodoform . .	℥ss.	℥j.

All by weight. Proceed as for gelat. chrysarobin.

Gelatum Naphthol-beta
(Unna)

As 10 per cent. gelat. iodoformi, but with beta-naphthol. ʒv.

Gelatum Olei Morrhuæ

Cod-liver oil . . .	℥v.
Russian isinglass . .	ʒij.
Water	℥j.
Sugar	℥iss.
Flavouring oils . .	♏viij.

Soak the isinglass in the water in a 1 lb. jelly-pot until soft. Add the oil, place the pot in a pan of water, heat, stirring all the time; when the isinglass is dissolved add the sugar, with which the oils have been well mixed; stir well until dissolved, and continue to stir as it cools and sets.

Gelatum Zinci
(Unna's Zinc Paste ; Zinkleim)

	Common	Hard
Gelatine	℥iij.	℥iv.
Zinc oxide	℥iij.	℥iij.
Glycerine	℥v.	℥v.
Water	℥ix.	℥ix.

All by weight. M.S.A.

To the hard is added, when required, ℥j. of pix liquid., ext. cannabis ind., or resorcin.

To the common sulph. præcip. ℥j. or ichthyol. ℥ss. to ℥j.

NOTE.—The B.P.C. zinc jelly is the 'common' one, with 2 oz. of zinc oxide and 5½ fl. oz. of glycerine.

The mode of procedure for manufacturing these jellies of Unna's has been already sufficiently indicated ; but as the zinc paste is the most commonly used, a few remarks in regard to it will not be out of place, especially as the method of making it may be followed in respect to similar powder-containing preparations. After the gelatine has been softened by twice its weight of water, contained in a suitable pot or jar, place the container in a pan of hot water and add 3 oz. of glycerine (*i.e.*, for the above proportions), and stir until dissolved. Meanwhile have the zinc oxide well triturated with the rest of the glycerine and water, until it is smooth and free from grit ; now transfer this to the pot, stirring well all the time, so that no local hardening of the gelatine may take place ; finally, transfer to a container, if the paste is not to be kept in the jar, and cool quickly. This paste and similar pastes are used for treating certain skin-diseases, being liquefied immediately before use, and spread upon the surface while warm. The greatest care should be taken that they are smooth and homogeneous.

Glycelæum

Bitter almond cake (in powder)	℥iss.
Glycerine	℥ij.
Water	℥j.

Mix.

This mixture was proposed by Mr. T. B. Groves as an emulsifier of fats, in order to make oleo-aqueous ointment-bases. One part of glycelæum mixes readily with 2 parts of oil or fat by simply rubbing in a mortar. If for internal exhibition water may then be added. Ol. ricini does not mix with glycelæum.

GLYCERINA, GLYCERITA, VEL GLYCEROLA

Under these and other names many preparations are now popular in which the therapeutic influence of glycerine is secondary. Most Pharmacopœias include selections of such preparations. The glycerine is used in them because it is a good solvent, one of the best preservatives, and a remarkably stable and, at normal temperatures, non-volatile liquid. The subjoined selection includes the most popular American, Continental, and English formulas. We make no distinction between the names glycerine, glycerite, and glycerole, although 'glycerite' appears to us the happiest title for medicated glycerines.

Glycer. Acidi Borici

Boric acid (in powder) .	℥j.
Glycerine sufficient to make	℥v.

Mix and dissolve by the aid of heat.

Glycer. Acidi Tartarici (syn. *Vidal's Glycerole*)

Pulv. acid. tart. . .	gr. xxij.
Glycer. amyli, B.P. .	℥j.

M.

Glycer. Aloes

Pulv. aloes socot. . .	℥j.
Glycerini . . .	℥viij.

Rub the powdered aloes in a mortar with the glycerine, transfer to a bottle, and heat gently on a water-bath, shaking occasionally until dissolved; then strain.

Glycer. Aurantii

Tr. aurantii . . .	℥j.
Glycerini . . .	℥vij.

M.

A Margate substitute for syr. aurantii, B.P.

Glycer. Bismuthi

Bismuth subnitrate .	1,142 gr.
Nitric acid . .	19 fl. dr.
Tartaric acid . .	1,720 gr.
Sodium bicarbonate	1,954 gr.
Glycerine . .	8 fl. oz.
Distilled water .	a sufficiency

Dilute the nitric acid with 10 dr. of water and dissolve the bismuth salt in it; slowly add 16 oz. of water. In the mixture dissolve 860 gr. of tartaric acid, then slowly add 977 gr. of the bicarbonate and make up to 32 oz. with water. Set aside overnight, then collect the magma on a filter, wash thoroughly, and drain Now dissolve 977 gr. of the bicarbonate and 860 gr. of tartaric acid in 5 oz. of water, warming until clear; dissolve the bismuth precipitate in this, filter, add the glycerine, and make up to 16 oz. with water.

The foregoing is a slightly acid glycerite well adapted for making pepsin and bismuth preparations. The following is a 'National Formulary' recipe:—

Bismuth. ammon. cit. .	gr. 2,048
Liq. ammon. fort. .	q.s.
Glycerini . . .	℥viij.
Aq. dest. ad . .	℥xvj.

Triturate the citrate with 6 oz. of water and 4 oz. of glycerine, and add gradually just enough liq. ammon. fort. to dissolve. Then add the rest of the glycerine and water.

Strength: 16 gr. of bismuth salt in ʒj.

Glycer. Boroglycerini, U.S.P.

Boric acid, in powder	310 grammes
Glycerine to make	1,000 grammes

Heat 460 grammes of glycerine in a tared dish to 150° C. (302° F.) and add the boric acid in portions, constantly stirring. Continue to heat, stirring all the time, until the contents of the dish weigh 500 grammes; then add 500 grammes of glycerine and mix thoroughly.

This is a diluted imitation of Barff's Boroglyceride.

Glycer. Belladonnæ, B.P.C.

Ext. belladonnæ	℥j.
Aq. bullientis	ʒj.
Glycerini ad	℥ij.

Rub the extract in a warm mortar with the water to a smooth paste and add the glycerine.

Glycer. Bismuthi Nitratis
(Balmanno Squire)

Bismuthi nitratis	℥ss.
Aq. destillatæ	ʒij.
Glycerini (Price) ad	℥vj.

Mix the nitrate of bismuth (not subnitrate) with 2 dr. of glycerine diluted with the water; then add to the rest of the glycerine and mix well together.

Glycer. Camphor-chloral
(Plain)

Chloral hydratis	ʒv.
Camphoræ	ʒiij.
Glycerini	ʒxxv.

All by weight. Rub the chloral and camphor together, and add the glycerine, heated to 50° C. Should be prepared as required, because the camphor crystallises out after it stands some time. Used as a skin application.

(Pavesi's)

Flowers of camphor	ʒiiss.
Chloral hydrate	ʒij.
Oil of juniper	ʒj.
Glycerine	℥j.
Rectified spirit	℥j.

Mix, keeping the bottle in the hand until the heat effects solution.

Glycer. Carmini, Ext. Phar.

Carmini	ʒj.
Liq. ammoniæ	♏100
Glycerini	ʒvj.
Aq. dest ad	℥j.

Mix the carmine with 80 minims of the ammonia solution and 1 dr. of water and dissolve. Add the glycerine gradually and heat on a water-bath till free from ammonia odour; when cold add the rest of the ammonia and water to 1 oz.

Glycer. Chloroformi

Chloroformi	℥ss.
Spt. rectificat.	ʒx.
Glycerini ad	℥v.

M.

Glycer. Croci (Squire)

Saffron	℥j
Glycerine	℥xx.
Proof spirit	℥xx.

Digest the saffron in the mixed liquids for an hour at a gentle heat, then filter.

A superior preparation to syr. croci.

Glycer. Ferri Dialysati

Liq. ferri dialysat.	℥j.
Glycerini ad	℥iij.

M.

Dose: A teaspoonful.

Glycer. Ferri Iodidi

Fine iron wire	℥j.
Iodine	℥ij.
Distilled water	℥iij.
Glycerine	℥xxvij.

Mix 2 oz. of glycerine and 2 oz. of water in a suitable flask, put in the iron wire and iodine, and promote chemical union by gentle heat. When the froth becomes white filter the solution into 24 oz. of glycerine, wash the flask and filter with 1 oz. of water, and make up to 31 oz. with glycerine.

Strength and dose same as syr. ferri iod., B.P.

Glycer. Ferri Bromidi

Fine iron wire	gr. 385
Bromine	gr. 770
Distilled water	℥iij.
Glycerine to	℥xxvj.

Proceed as described under glycer. ferri iod.

Dose: For adults, ʒj. = 5 gr. $FeBr_2$.

Glycer. Hydrargyri Perchloridi

(Vigier's)

Hydrarg. perchlorid.	ʒss.
Glycerini	℥j.

Solve.

Used as an application for scabies, pediculi, &c., but is a convenient solution for making antiseptic lotions—ʒj. in aq. ℥vj. giving practically a 1 in 1,000 solution.

An equally convenient solution of perchloride of mercury containing 1 gr. in 10 minims, which keeps better than if made with pure glycerine, is the following:—

Hydrargyri perchlorid.	gr. 96

Put into a flask with

Glycerin.	℥iss. (by weight)
Aquæ destillat.	ʒvj.

Boil gently until dissolved, cool, make up to exactly 2 fl. oz. with distilled water.

Glycer. Hydrastis, U.S.P.

Hydrastis (in fine powder)	℥xvj.
Glycerine	℥viij.
Rectified spirit	a sufficiency
Water to	℥xvj.

Moisten the hydrastis with 6 oz. of spirit, pack in a percolator, and exhaust with more spirit. Add 4 oz. of water to the percolate, recover the spirit, and make up the residue to 8 oz. with water. After twenty-four hours filter, washing the filter with water to 8 oz., and add the glycerine.

Glycer. Hypophosphitum

Liq. ferri hypophosphit. fort.	℥iv.
Manganes. hypophosphit.	℈iv.
Calcii hypophosphit.	℈viij.
Sodii hypophosphit.	℈iv.
Acid. hypophos. (30 p.c.)	℥ss.
Glycerini	℥x.
Aq. destil. ad.	℥xx.

Dissolve the hypophosphites in 5 oz. of water to which the acid has been added. To this add the liquor, the glycerine, and water to 20 oz. After a day filter.

Glycer. Iodi

(Morton's Fluid)

Iodine	gr. x.
Potassium iodide	ʒss.
Glycerine	℥j.

Put the iodine and iodide in a glazed porcelain mortar, triturate with about 20 minims of water, and slowly add the glycerine to make a perfect solution.

This is for injection in spina bifida. There are other iodine glycerines, varying in strength from 4 gr. to ʒj. of iodine per oz., with as much potassium iodide to promote solution.

Glycer. Iodoformi

Iodoformi	ʒj.
Coumarini	gr. ss.
Glycerini ad	℥j.

Triturate the powders together and add the glycerine.

Glycer. Pepsin. Acid.

Soluble scale pepsin	ʒv. ℈ij.
Dilute hydrochloric acid	℥ss.
Orange-flower water (conc.)	℥j.
Glycerine	℥x.
Distilled water to	℥xx.

Mix the acid with 6 oz. of water and add the pepsin. Dissolve by gentle agitation and add the orange-flower water; filter, add the glycerine, and make up to 20 oz. with water.

Glycer. Pepsin., N.F.

Pepsin in scales .	. 640 gr.
Hydrochloric acid	. 80 minims
Purified talc .	. 120 gr.
Glycerine . .	. 8 fl. oz.
Water to . .	. 16 fl. oz.

Mix the acid with 7 oz. of water, add the pepsin, and dissolve by shaking. Mix the talc with the solution and filter clear, washing the filter with water to 8 oz. To this add the glycerine, and mix.

The first of the foregoing formulas is in accordance with English requirements. Sometimes sherry is used as a flavour by preference. Scale pepsins which dissolve to make a clear solution are readily obtainable. The pale varieties are the best.

Glycer. Papain. may be made in the same manner as the second formula, but with 1 oz. of papain and acid. hydrochlor. ♏xl. to the 16 oz.

Glycer. Phosphori

See Elixir Phosphori and Liquor Phosphori.

Glycer. Picis Liquidæ, N.F.

Tar	1 troy oz.
Carbonate of magnesium	2 troy oz.
Glycerine . . .	4 fl. oz.
Rectified spirit . .	2 fl. oz.
Water to . . .	16 fl. oz.

Stir the tar in a mortar with 3 oz. of water, pour off the water, and repeat until the water comes off only feebly acid. Now triturate the washed tar with the spirit, add the magnesia, glycerine, and 10 oz. of water. Filter through a loose-texture paper supported by muslin and wash the filter with water to make the filtrate measure 16 oz.

Glycer. Saponatus

(Hebra)

Two strengths of this ointment-basis are made—viz., *Gly. Sapon. Mollis*, consisting of cocoanut-oil soap 8 parts and glycerine 92 parts (by weight), and *Gly. Sapon. Densior*, which contains 20 parts of the soap and 80 parts of glycerine. The soap in shavings is dissolved in the glycerine by heat. Subjoined are a few of the medications:—

Ac. salicylic. 5 per cent. c̄ G.S.D.

Do. c̄ creosoto āā 5 per cent. c̄ G.S.D.

Iodoform 10 to 50 per cent. c suitable mixtures to give proper consistency.

Resorcin. 5 per cent. c̄ G.S.D.

Sulph. præcip. 5 per cent. c̄ G.S.D.

Zinci oxid. 10 per cent. c̄ G.S.M.

The medicament is mixed with a portion of the glycerine and added to the soap solution.

Glycer. Vitelli, U.S.P.

(syn. *Glyconin*)

Yolk of egg . . .	℥ivss.
Glycerine . . .	℥vss.

Both by weight. Rub together until thoroughly mixed and preserve in a well-stoppered bottle.

Glycerophosphates of various bases were introduced into medicine in 1894, when Dr. Albert Robin, a Parisian physician, declared that such salts are the active principle of the orchitic extract with which the late Dr. Brown-Séquard proposed to revivify mankind. Be that as it may, the glycerophosphates have since become notable medicines of the tonic type, and our purpose is to tell how to prepare them. Glycerophosphoric acid is a compound consisting of a molecule of glycerine and a molecule of phosphoric acid, a molecule of water being set free in the act of union. The empirical formula of the compound is $C_3H_9PO_6$, and the constitutional $C_3H_5(OH)_2.O.PO(OH)_2$. It is easiest made by Delage's method, as follows :—

Put into a suitable flask 100 grammes of 60-per-cent. phosphoric acid and 150 grammes of glycerine. Fix a double-perforated cork into the flask, one hole with a thermometer in it, the other with a safety-tube as a vent. Then heat with a bunsen over gauze. The mixture begins to boil at 120° C. and turns slightly pale, darkening until 160° is reached, and between that and 190° it becomes dark brown, syrupy, and gives off acrolein vapour. The heat is then removed and the mixture allowed to cool, when it becomes viscous. Next the mass is mixed, about 30 grammes at a time, with a chalk mixture (50 grammes of precipitated chalk to 250 c.c. of water), the mixture well stirred to promote effervescence, and at the end of six hours it is filtered. The filtrate is a solution of calcium glycerophosphate, which is precipitated by the addition of alcohol, is collected, dried partially with bibulous paper, and finally over sulphuric acid in a bell-jar.

From the calcium salt other saline compounds can be prepared. The medicines were given subcutaneously at first, but now they are mostly given *per os* in doses of 5 to 15 gr. per day; but iron glycerophosphate is given in daily doses of 3 to 5 gr. The following are typical methods of administering the glycerophosphates in neurasthenia and similar nervous affections accompanied by gastric weakness :—

Glycerophosphate Cachets

Glycerophosphate of lime	gr. v.
Glycerophosphate of magnesia	gr. iss.
Glycerophosphate of iron	gr. ¾
Powdered nux vomica .	gr. ss.
Pepsin	gr. iiss.
Diastase	gr. ¾

This mixture to fill one cachet. A cachet to be taken twice daily, at meal-times.

Glycerophosphate Pastilles

Glycerophosphate of lime	gr. iij.
Powdered chocolate .	gr. xv.
Syrup . . .	a sufficiency

To make one pastille.

Syrupus Glycerophos. Co. B.P.C.

Boil cudbear ¼ oz. in distilled water 10 oz. for ten minutes, filter, and in the filtrate dissolve calc. glycerophos. 160 gr., potassium, sodium, and magnesium glycerophos. of each 80 gr., iron glycerophos. 40 gr., citric acid 30 gr., caffeine citrate 80 gr., strychnine hydrochloride 2 gr., and sugar 14 oz. Add chloroform 20 minims and S.V.R. 40 minims, and make up to 20 fl. oz. with water.

Dose : ʒj. to ʒij.

Gould's Hop Compound

Hops	1½*d.*	worth
Assar root [sassafras] .	2*d.*	,,
Codru bark [burdock] .	1½*d.*	,,
Kradna root [mandrake] . . .	1½*d.*	,,
Rolique root [liquorice]	1½*d.*	,,
Noil root [dandelion] .	1½*d.*	,,
Rock root [gentian] .	1½*d.*	,,
Tacher [chiretta]. .	1½*d.*	,,
4 pieces of lump-sugar		

Place the roots and bark in 3 pints of water, simmer slowly down to 1 quart, pour the boiling liquid on the hops, tacher, and sugar, allow it to stand thirty minutes, cool, strain, and bottle.

This is the prescription of S. Gould, of Bradford, which chemists are sometimes asked to dispense. The correct names of the drugs are in brackets.

Gossypia Antiseptica, or antiseptic cottons, are made by saturating absorbent cotton-wool in solutions of certain antiseptics, such as boric acid, drying, and carding thereafter. While the saturation is effected in a similar way to gauzes (*see* page 451), the drying and carding require special experience and apparatus, to describe which is beyond the limits of this book.

GRANULAR EFFERVESCING PREPARATIONS

The late Mr. Alfred Bishop, in 1857, introduced 'Granular Effervescent Citrate of Magnesia,' thus paving the way for official recognition of granular effervescent salts within a decade, and creating an entirely new branch of trade for wholesale druggists, many of whom now produce these granular preparations at the rate of tons per day during the warm weather. Preparations of this nature contain either citric or tartaric acid, or both, the acid being in slight excess of the alkali used. Obviously, if any medicated preparation contains a potassium salt tartaric acid must not be used in excess, because in that case bitartrate of potassium would be precipitated, and would render the draught unsightly. The nature of the essential ingredients of the granules depends, however, upon the methods of granulation, of which there are four :—

(1) To make the powders into a tough paste with rectified spirit, press the mass through a large-meshed sieve, and dry quickly. This is the method almost universally pursued in the United States, but it is so expensive that it is only adopted

in this country when making granular preparations a few ounces at a time.

(2) The method suggested by the late Henry Napier Draper and adopted by the British Pharmacopœia—viz., to heat the dried ingredients together until a temperature between 200° and 220° F. is reached, stirring assiduously all the while so as to form granules. The objections to this plan are that it is difficult to work on the large scale, and much of the ingredients adheres to the dish, so being practically lost for granulation purposes.

(3) The ingredients are heated quickly until the mass becomes pasty. The pasty mass is lifted to the top at intervals of a few seconds, so as to allow a fresh portion of the powder to come in contact with the bottom of the basin. It is then pressed through a wire sieve of convenient-sized mesh (No. 6 to No. 12 sieves are best), using a slight downward and a smart lateral pressure. The granules are received on a blanket of white felt or unnapped flannel, or upon white paper, and dried in a warm room. On the large scale flat circular steam-jacketed pans are used for heating the powder. On the small scale the best apparatus to employ are an enamelled-iron dish and a slow-combustion gas-furnace. With some practice one soon learns how to moderate the heat of the naked gas-flame so as to produce a good mass without charring.

(4) In some cases, such as preparations containing alkaloids, antipyrin, &c., the basis ingredients are allowed to stand separately in a damp atmosphere for twelve hours, then they are carefully blended along with the medicinal ingredient, and pressed down in an earthenware basin. After about twelve hours the mass becomes sufficiently pasty for granulation, just as if it had been heated, and the colouring of the granules is thus avoided.

As the last two methods are invariably followed in England we shall confine our attention to them. The principle of both is the same. It is well to understand at the outset how granulation takes place. If one were to heat, say, lemon kali, it would not become pasty, for there is no citric acid in it, and it is the citric acid in the granular preparations which is the chief cause of granulation, assisted, to a small extent, by the moisture of the sugar. A glance at the formula of the acid ($H_3C_6H_5O_7,H_2O$) will show that water is present. This is set free on heating, and the moisture partly forms a syrup with the sugar, thereby acting as an adhesive agent. The object to be sought is to apply enough heat to cause the whole to adhere, and to lose as little carbonic acid as possible during the process. The same result is obtained by damping the sugar or the mixed powders before heating, but the difficulty of uniformly damping the powder results in unequal granulation. The only effective substitute for citric acid is bisulphate of soda, the use of which will be illustrated in one of the recipes, while undried sulphate of magnesia in sufficient proportion gives moisture enough to granulate.

Mag. Cit. Gran. Eff., or, as it is now with safety called Granular Effervescing Citrate, was originally made with neutral citrate of magnesia as one of its ingredients, but Mr. Bishop 'had to abandon this plan' (so he stated eleven years after its introduction) 'by finding that the compound would not keep, soon losing its effervescence and colour.' What he put in its place is not stated, but the practice of manufacturers nowadays is to use Epsom salts. Moreover, as the popularity of the article has increased year by year, and its use extended to making a pleasant effervescing drink, magnesia is frequently entirely absent, the sugar has increased enormously, and it may be bought nicely flavoured with lemon and the like. The reduction of sulphate of magnesia was inevitable, for the somewhat bitter flavour is not appreciated by the public palate with a craving for a pleasant drink for a warm summer's day; but competition in price is chiefly responsible for increase in the sugar and for the same reason the citric acid has been decreased from the original proportion of 1 to 1 of tartaric acid to 1 to 6 or 7. With the latter proportion the addition of 1 oz. of water to 4 lbs. of the mixed powders almost becomes necessary for granulation. The first formula which we give is a fair representative of the better qualities of the citrate.

I

Bicarbonate of soda	lb. ij.
Tartaric acid	℥xxv.
Citric acid	℥iv.
Sulphate of magnesium (powdered but not dried)	℥iij.
Icing sugar	lb. iij.

Granulate by the third method.

II

Bicarbonate of soda	℥xij.
Tartaric acid	℥x.
Sulphate of magnesia	℥ij. ʒiij.
Citric acid	ʒv.
Oil of lemon	gtt. x.

Rub the citric acid and sulphate of magnesia together to powder, then the tartaric acid and soda; mix the two and sift. Heat a polished copper dish on a water-bath and introduce the mixture. After the lapse of a few minutes the mass will be found to separate, and it should then be stirred with a glass or bone spatula, until the granules are completely formed. Finally the oil of lemon is added. The operation may be judged to be complete when the granules are perfectly white and do not feel soft upon pressure with the spatula. Separate the best granules by means of a suitable sieve, and use up the waste in the next batch.

III

Acid. citric.	lb. iv.
Magnesiæ calc. (Jenning's)	lb. iss.
Sodæ bicarb. (Chance's)	lb. iij.
Acid. tart.	lb. iij.
Pulv. sacch. alb.	lb. vj.
Ol. limonis	℥ss.

To the powdered citric acid add the sugar and mix thoroughly; then add the soda, magnesia, and tartaric acid, sift three times, and granulate by No. I method.

We give Nos. II. and III. as curiosities mainly; the former because it is Draper's original recipe which the B.P. has followed so far as directions are concerned. The third is an excellent example of how far conscientious people will go in the direction of truth. It is supposed to produce Veritable Citrate of Magnesia, which it does not any more than No. I. It is only public analysts who worry about the public not getting 'citrate of magnesia' when they ask for it. The chemist and druggist's duty in the matter is to give the public what they want, and that is such preparations as No. I. We have already referred to the use of crystallised bisulphate of soda as a substitute for citric acid. The formula (devised by Mr. F. C. Clayton, of Birmingham) is :—

Bicarbonate of soda	lb. j.
Tartaric acid	℥xss.
Citric acid	℥iv.
Epsom salts	℥j.
Bisulphate of soda	℥ij.
Sugar	℥xviij.
Oil of lemon	q.s.

This powder granulates well without the bisulphate, but when Mr. Clayton devised the formula the idea was that the citric and tartaric acids should be present in equal proportions. Thirteen ounces of tartaric acid and 4 oz. of bisulphate serve without the citric acid. Mr. Clayton's directions for granulation may be quoted, as they are excellent, though followed by few nowadays, so far as the heating plate is concerned :—

> The ingredients are mixed in the usual manner by sifting, and thrown on to a hot metal plate (preferably of zinc, but may be made of enamelled iron, tinned iron, or tinned copper) to a depth of not more than ½ inch. In a few minutes the mixture becomes spongy, when it is worked about and turned over with a scoop or other convenient instrument, to prevent any particles becoming too dry. In a minute or two more (this is the most delicate part of the operation, but impossible to describe on paper) it should be thrown upon a cold slab, and put through a sieve of four to six meshes per inch, *again heated* and sifted through a rather finer sieve, and finally heated until desiccation is complete. It is well to watch it at first to see that the newly made granules do not adhere to each other ; but during the latter part of the final drying this is unnecessary.

Mr. Clayton remarked, when he communicated his process to the British Pharmaceutical Conference, that he knew a manufacturer who dried his preparation in a warm closet on skins of white leather—'but the reason I know not.' Truly there is nothing like leather. That part of Mr. Clayton's method beginning with the two words italicised is objectionable, and exactly the point where the white leather comes in. Flannel blankets are better, however.

Flavoured Granular Citrates are made with the addition of colouring matters and flavours similar to those noted on page 208. These must be perfectly blended with the powders before heating. There is some loss of the flavouring agents, but most of them are imprisoned by the pasty mass.

Medicated Granular Preparations.—The 'British Pharmacopœia' of 1885 and its 'Additions' of 1890 contain four granular effervescent salts—viz., magnesii sulphas effervescens, sodii citrotartras effervescens, sodii phosphas effervescens, and sodii sulphas effervescens. The first and second contain sugar, the others do not. The first of the following gives the proportions for Citrotartrate of Sodium, which, surprising as it may appear, is the official representative of Mag. Cit. Gran. Eff. :—

I		II	
Bicarbonate of sodium .	℥xvij.	Bicarbonate of sodium .	℥xij.
Tartaric acid . . .	℥ix.	Tartaric acid . . .	℥v.
Citric acid . . .	℥vj.	Citric acid . . .	℥ivss.
Refined sugar . . .	℥v.	Refined sugar . .	℥x.
Mix as directed in the B.P.			

We quote No. I. from the B.P. because it is the basis for medicated preparations of this class, but we prefer the second arrangement of quantities (No. II.). The medicated preparations most in demand are as undernoted, the quantities given being the weight of the medicine to add to each 70 gr. of the basis before granulating. As the loss of weight in granulating is between 10 and 15 per cent., the dose of medicine is contained in a teaspoonful (ʒj.) of the granular preparation :—

*Acetanilide . . .	5 grains	Lithium citrate . .	2 grains
Ammonium bromide .	10 grains	Lithium salicylate . .	5 grains
*Antipyrin . . .	5 grains	*Phenacetin . . .	5 grains
Bismuth carbonate . .	5 grains	*Piperazine . . .	5 grains
*Bismuth citrate (ammonio) . . .	2 grains	*Piperazine and phenocoll, of each . . .	5 grains
*Caffeine citrate . .	1 grain	Potassium bromide .	5 grains
*Caffeine hydrobromate .	1 grain	Potassium citrate . .	10 grains
Cerium oxalate . .	2 grains	Potassium iodide . .	2 grains
Iron citrate (ammonio) .	2 grains	*Quinine citrate . .	1 grain
Iron and quinine citrate .	2 grains	Sodium bromide . .	10 grains
Iron carbonate (Blaud's) .	2 grains	*Sodium salicylate . .	5 grains
Iron iodide . . .	1 grain		

In making the granular salts of such delicate substances as antipyrin, piperazine, and others indicated by (*), granulation should be effected by the fourth method, or by massing the ingredients with rectified spirit, otherwise the granules become yellow. The granules should be dried at a low heat. For small quantities, required to be made extemporaneously, the spirit method is preferable. Several compound salts are in demand, such as are here noted.

Digestive		**Easton's**	
Scale pepsin . . .	gr. ij.	Ferri pyrophosph. . .	gr. j.
Ammonio-citrate of bismuth	gr. v.	Quinin. hydrochlor. .	gr. j.
		Strych. sulph. . . .	gr. $\frac{1}{32}$
In each drachm.		In each drachm.	

Magnesian Chalybeate

Ferri sulph. gran.	gr. v.

In each drachm of mag. sulph. eff.

Tonic and Digestive

Bism. ammon. cit.	gr. v.
Ferri ammon. cit.	gr. iij.
Pepsin.	gr. ij.

In each drachm.

The basis to use is No. II., except where otherwise stated. Artificial mineral-water salts may be converted into granular effervescing preparations exactly in the same way as Sodii Sulph. Eff., B.P., the mineral-water salt taking the place of sodii sulph., and in half the proportion. The following is an example :—

Recipe for Vichy Salt

Bicarbonate of sodium	8 oz. 256 gr.
Dried phosphate of sodium	21 gr.
Dried sulphate of magnesium	231 gr.
Dried chloride of potassium	305 gr.
Dried chloride of sodium	428 gr.

Mix.

Recipe for Gran. Eff. Vichy Salt

Vichy salt	12½ oz.
Bicarbonate of sodium	25 oz.
Tartaric acid	13½ oz.
Citric acid	9 oz.

Mix and granulate in the usual way.

These salts are better without sugar, but, if desired, the mag. sulph. eff. formula may be followed in the same manner.

GUTTÆ, OR DROPS

The following aqueous solutions, or eye drops, are frequently required at the dispensing counter:—

	Per oz.
Atropine sulphate	1, 2, and 4 gr.
Cocaine hydrochlorate	10 gr.
Copper sulphate	2 gr.
Daturine sulphate	2 gr.
Duboisine sulphate	1 gr.
Homatropine hydrobromate	2 and 4 gr.
Hyoscine hydrobromate	2 gr.
Mercury perchloride	$\frac{1}{8}$ gr.
Physostigmine sulphate	2 and 4 gr.
Pilocarpine nitrate	2 gr.
Silver nitrate	2 and 4 gr.
Zinc chloride	2 gr.
Zinc sulphate	2 gr.

In each case the solvent is distilled water recently boiled.

Guttæ Amaræ (Baumé)

Pulv. sem. Ignatii	℥x.
Potassæ carbonat.	℈ij.
Fuliginis splendent.	gr. viij.
Spt. tenuior.	℥xx.

All by weight. Macerate ten days, press, and filter.

Barrack-Sergeant's Drops

Ol. juniperi	℥iss.
Ol. terebinthinæ	℥iss.
Tr. opii	ʒij.
Spt. rectificat.	℥iij.

M.

Dose: Ten to twenty drops on sugar.

Bateman's Pectoral Drops

Tr. opii	ʒv. ♏xx.
Tr. catechu	℥ss.
Spt. camphoræ	ʒv.
Ol. anisi	♏viij.
Sacch. ust.	ʒij.
Spt. tenuior. ad	℥xvj.

Misce et filtra.

Cholera Drops

Tr. opii	ʒij.
Tr. capsici	ʒij.
Tr. rhei co.	ʒij.
Spt. camphor.	ʒij.
Ess. menth. pip. (1 in 10)	ʒij.

M.

Dose: Fifteen drops for pain, 20 to 30 drops for diarrhœa.

Diarrhœa Drops

Acid. nitric. dil.	ʒij.
Spt. camphoræ	ʒj.
Tr. opii	ʒj.
Ol. menth. pip.	♏v.
Spt. chloroformi	ʒij.
Glycerini ad	℥j.

M.

Dose: Half a teaspoonful in a wineglassful of water every three hours.

Earache Drops

I

Camphor. chloral.	ʒj.
Ol. amygdal. dulc.	℥ss.
Glycerini	ʒvj.

M.

A few drops to be put in the ears twice a day; then a little cotton-wool is put in the ears.

II

Liquid ox-gall	℥ss.
Glycerine	℥ss.

Mix.

For hardened wax.

Hot Drops

(syn. *Tr. Capsici et Myrrhæ, N.F.,* 'No. 6')

Capsicum, in No. 20 powder	℥ss.
Myrrh, in coarse powder	℥ij.
Rectified spirit	a sufficiency
Water	a sufficiency

Mix the powders with an equal bulk of coarse sand, and percolate with a mixture of 9 parts of spirit and 1 part of water until 16 oz. of tincture is obtained.

Guttæ Hollandicæ, otherwise called Dutch drops, ol. empyreumaticum bativicum, ol. haarlemensis, Tilly drops, and medicamentum gratia probatum. It is impossible to say what the true Haarlem oils is composed of. It is still made in the city of Haarlem, costs six times more than the imitation, is lighter in colour, and more transparent, but the properties are very similar. As to what it was originally there is also some doubt. One writer says that it was the red oil obtained as a second fraction in the dry distillation of resin; another, that it was made by the dry distillation of a mixture of aloes, myrrh, olibanum, and olive oil; and another, that it was a mixture of balsam of sulphur, oil of turpentine, and Dippel's oil. The last, *minus* the ol. animalis, is the form generally adopted now, and the following is a translation of directions for making it followed in Denmark and Holland :—

> Mix in an iron vessel large enough to allow some frothing 4 parts of linseed oil and 1 part of sulphur. Heat to a temperature of 165° C., stirring well all the time, until the mixture drops off the stirrer with a glassy appearance. Remove from the fire and add 15 parts (by weight) of oil of turpentine, and agitate until solution is complete or nearly so. Then filter. The liquid should be limpid and of a brownish-red colour.

Of the following formulas only Nos. I. and III. closely resemble the original. Nos. II. and IV. are strange diversions, which show how things may become altered :—

I

Balsam of sulphur	℥j.
Oil of turpentine	℥iv.

Mix.

II

Ol. lini	℥xl.
Resin.	lb. j.
Sulphur.	lb. j.

Boil till stringy, remove from the fire, and add

Ol. terebinth.	℥xx.
Liq. ammon. fort.	♏50

M.

III

Balsam of sulphur	℥j.
Oil of turpentine	℥ij.
Huile de Cade	℥iv.

All by weight.

Mix.

IV

Ol. terebinth.	℥j.
Tr. guaiac. simp.	℥j.
Spt. æther. nit.	℥j.
Ol. succin. rect.	℥j.
Ol. caryoph.	℥j.

M.

The preparation is put up in curious ½-oz. phials, wrapped in a more curious, ancient-looking handbill. Sailors and others use it as a diuretic, &c., and, nasty though it be, it is efficacious.

Jesuit's Drops
(*Elixir Antivenereum*)

I

Guaiacum	℥ij.
Peru balsam	ʒj.
Sassafras	℥j.
Rectified spirit	℥x.

Digest a week and filter.

II

Copaiba	℥j.
Guaiacum	ʒij.
Oil of sassafras	ʒj.
Salt of tartar	ʒss.
Rectified spirit	℥v.

Digest a week and filter.

An almost obsolete preparation, for which tr. benzoin. co. is frequently, but erroneously, given, as there is little in common between them.

Swedish or Thieleman's Cholera Drops

Ol. menth. pip.	℥j.
Spt. rectificat.	℥viij.
Tr. opii crocat.	℥iij.
Tr. opii	℥viij.
Tr. valerianæ	℥xiiss.

M.

Dose : One fluid drachm.

Harrogate Salts

Pulv. potass. sulph. c̄ sulph. . . .	℥iss.
Pulv. potass. bitart. .	℥v.
Magnes. sulphat. . .	℥xl.

M.

Two ounces to be put in a wine-bottleful of water, and a wineglassful taken every morning.

Haustus Phosphoricus

('Funk' Draught for examination candidates)

Acid. phosphoric. dil. .	ʒij.
Liq. strychninæ . .	♏xv.
Aq. ad	℥j.

M.

Dose: A teaspoonful in water thrice daily for three days before the examination, and a double dose immediately before entering.

Hiera Picra

Pulv. Aloes c̄ Canellâ

I

Pulv. aloes . . .	℥xij.
Pulv. canellæ . . .	℥iij.

M.

The 'London Pharmacopœia' prescribed Socotrine aloes, and the Dublin hepatic. The U.S.P., 1870, continued the London form, which is still kept up by the 'National Formulary.' The Edinburgh hiera picra was a mixture of aloes, Virginian snake-root, and ginger. This mixture is the old *Tinctura Sacra* in a dry form. In some parts of the country the subjoined recipe is in use, and is a pleasanter medicine than the above:—

II

Pulv. aloes bbd. . .	℥viij.
Pulv. canellæ . . .	℥ij.
Pulv. zingib. . . .	℥ss.

M.

Dose (as an emmenagogue), 5 gr. to 15 gr.—*i.e.*, as much as will lie upon a threepenny-piece or sixpence—every night.

NOTE.—Corruptions of the name of this very old remedy are 'Heiree Peiree' and 'Hicra Picra.'

INFUSA–INFUSIONS

When a simple infusion of a drug is required, if there is no official formula for it, the best strength to adopt is 1 oz. of the drug to a pint of boiling water, infusing half an hour, and straining. This serves for American and English prescriptions. Most Continental countries adopt a strength of 1 in 10, except France, where medicinal infusions are made as thin as 'tea'—*i.e.*, 1 in 100 or 200.

Concentrated infusions are eight times stronger than the fresh preparations, and contain from 20 to 25 per cent. of rectified spirit to preserve them. They are prepared in various ways, of which good examples are given in the British Pharmacopœia under liquores conc., which are 1-to-9 preparations.

The following formulas also serve to illustrate methods of manufacture :—

Inf. Aurant. Conc.

English bitter-orange peel, cut small	℥viij.
Boiling water	℥viij.

Mix, pack in a percolator, pour on more boiling water to get ℥xij. of percolate, add ℥iv. of rectified spirit, and set aside. Continue the percolation with hot water until ℥xx. more of percolate is obtained. Evaporate to ℥iv., mix with the reserved portion, and after standing for a day or two decant the clear liquor and filter the rest.

Inf. Aurant. Co. Conc.

English bitter-orange peel	℥iv.
Fresh lemon-peel	℥ij.
Bruised cloves	℥j.
Rectified spirit	℥iv.
Water	a sufficiency

Mix the spirit with 3 oz. of water and pour upon the drugs. In three hours pack in a percolator and percolate with cold water until 10 oz. is obtained. Reserve this. Continue percolation with boiling water until other 30 oz. is obtained. Evaporate this to 9½ oz. Mix with the reserved portion, add ½ oz. S.V.R., and filter.

Inf. Calumbæ Conc.

Calumba (in No. 40 powder)	℥vij.
Rectified spirit	℥iv.
Water	℥xvj.

Make a liquor by percolation with the mixed liquids, using more spirit and water in the same proportions to obtain 20 oz. of percolate.

In a similar way prepare inf. caryoph. conc., inf. catechu conc., inf. cuspariæ conc., inf. gentian. conc., inf. serpent. conc., and inf. valerian. conc., in each case using eight times the official quantity of solids.

Inf. Buchu Conc.

Bruised buchu-leaves	℥vij.
Rectified spirit	℥viij.
Water	℥xij.

Make 20 oz. of tincture by percolation.

Inf. Cinchon. Acid. Conc.

Ext. cinchon. liq.	℥viij.
Acid. sulph. arom.	℥ij.
Spt. rectificat.	℥iij.
Aq. destillat.	℥vij.

Mix the last three liquids and add the extract. Set aside for several days, decant the clear, and filter the rest.

Inf. Digitalis Conc. B.P.C.

Macerate 480 gr. of powdered digitalis in 15 oz. of distilled water for twenty-four hours, strain 10 oz., and add 5 oz. of 90 p.c. alcohol. Repeat the maceration twice (six hours each time), evaporating both liquors to 5 oz., which add to the spirit macerate, and filter. A 1-to-7 preparation.

Inf. Gentianæ Co. Conc., B.P.C.

Gentian-root (No. 20 powder)	2 oz.
Dried bitter-orange peel	2 oz.
Dried lemon-peel	1 oz.
Tincture of fresh lemon-peel	1 fl. oz.
Alcohol (90-per-cent.)	4 fl. oz.
Distilled water	sufficient

Macerate the drugs in 1 pint of distilled water for 24 hours; express. Reserve 10 fl. oz., to which add the tincture and alcohol. Macerate the marc twice in 1 pint of water (6 hours), press, mix, and evaporate to 5 fl. oz. Add to the first portion to make 1 pint. A 1-to-7 preparation.

Inf. Maticæ Conc.

Matico-leaves	℥viij.
Rectified spirit	℥iv.
Boiling water	a sufficiency

Pour a pint of boiling water upon the leaves, macerate twenty-four hours, and press out the liquor, which reserve. Repeat the maceration with another pint of water, press, and mix the liquors. Bring to the boil and evaporate to 16 oz. Add the spirit, and strain through flannel.

Inf. Quassiæ Conc.

Quassia	℥ij.
Rectified spirit	℥iv.
Water	a sufficiency

Macerate the quassia in 16 oz. of water overnight, strain, and wash the marc with water to 16 oz. Add the spirit and ½ oz. of kaolin. Shake well and filter, returning the filtrate until it comes through bright. Use a small quantity of animal charcoal if it is required light.

Inf. Rhei Conc.

Rhubarb (in coarse powder)	℥iv.
Rectified spirit	℥iv.
Water	a sufficiency

Macerate the rhubarb in 16 oz. of water for twenty-four hours and press out the liquor. Add the spirit to it and reserve. Again macerate the rhubarb in as much water as is required to make a pint, and after twenty-four hours press out the liquor. Mix with the reserved portion and filter.

Inf. Rosæ Acid. Conc.

Rose-petals	℥iv.
Sulphuric acid	♏lxxx.
Water to	℥xvj.

Macerate the petals in 5 oz. of the liquid for a day, pack in a percolator, and continue percolation with the acid mixture until 16 oz. of percolate is obtained; then add 4 oz. of rectified spirit.

Inf. Senegæ Conc.

Senega (in No. 20 powder)	℥viij.
Rectified spirit	℥iv.
Water	℥xvj.

Make 20 oz. of liquor by repercolation, and to the finished product add

Solution of ammonia	♏x.

Mix.

Inf. Sennæ Conc.

Fol. sennæ	℥xvj.
Rad. zingib. contus.	℥ij.
Spt. rectificat.	℥iv.
Aq. destillat.	℥xxx.

Macerate the senna and ginger for twenty-four hours in 16 oz. of water, stirring occasionally, and press out the liquor. Add the spirit, and reserve. Repeat the maceration and pressure with the rest of the water to make 20 oz. of product, and filter with ½ oz. of kaolin.

Inhalation-fluid (Coghill's)

Ethereal tinct. of iodine	ʒij.
Carbolic acid	ʒij.
Creosote or thymol	ʒj.
Rectified spirit to	℥j.

When the symptoms are urgent chloroform or ether may be added.

The iodine tincture may be prepared by dissolving 33 gr. of iodine in 1 oz. of ether.

Inhalation (Dr. St. Martin's)

Acid. carbolic.	ʒv.
Liq. ammon. fort.	ʒvj.
Aq. destillat.	ʒx.
Spt. rectificat.	℥iiss.

S. et M.

To be used in a smelling-bottle for catarrh, colds, &c.

Inhalation (Churchill's)
(Spirone)

A solution of iodide of potassium in a mixture of acetone (1), glycerine (2), and water (13). The figures approximately represent the parts. The iodide is in the proportion of about 8 gr. to the ounce.

INJECTIONES

The following are the most frequently required vaginal and urethral injections. The solvent in each case is recently boiled distilled or soft water. The quantities of the solids are for 1 oz.:—

Inj. acidi borici	gr. v. to gr. x.
Inj. aluminis	gr. j. to gr. v.
Inj. alum. et acid. tannic.	gr. v. each
Inj. alūm. et zinc. sulph.	gr. iij. and gr. ij.
Inj. argent. nit.	gr. ss. increased to gr. ij.
Inj. cupri sulphat.	gr. j. increased to gr. ij.
Inj. hydrarg. perchlor.	gr. $\frac{1}{4}$ to gr. ss.
Inj. plumbi acetat.	gr. ij. to gr. v.
Inj. plumbi c̄ opio (ext. opii liq. ♏ij.)	ditto.
Inj. potass. permang.	gr. ss. to gr. j.
Inj. zinci chlorid.	gr. ss. to gr. ij.
Inj. zinci sulphat.	gr. j. to gr. iv.
Inj. zinci sulphocarbol.	gr. ij. to gr. v.

The weaker strengths of solutions should invariably be started with, and the potency gradually increased.

Injection Brou.

The following is the formula generally adopted in making imitations of this celebrated injection:—

Zinc. sulph.	gr. xv.
Plumbi acet.	gr. xxx.
Tr. catechu	ʒj.
Tr. opii crocat.	ʒj.
Aquæ ad	℥vj.

Not to be filtered.

To those who have not tr. opii crocat. at hand the following formula will be serviceable:—

Opium	gr. viij.
Catechu	gr. viij.
Saffron	gr. xvj.
Boiling water	℥vj.

Infuse an hour, strain, and add

Acetate of lead	gr. xxij.
Sulphate of zinc	gr. xlv.

The following curious formula is an American attempt to get at the composition of the original article through analysis:—

Tr. catechu (1 in 16)	ʒj.
Cocain. muriat.	gr. .
Plumbi acet.	gr. x.
Zinci sulphat.	gr. x.
Aq.	℥vj. ʒvj.
Spt. rectificat.	℥ss.

Dissolve the acetate and sulphate each in $\frac{1}{2}$ oz. water, mix, and add the tincture mixed with 4 oz. of water. Dissolve the cocaine in the rest of the water, add it, and finally the spirit.

Inject. Maticæ (Grimault)

Cupri sulphat.	gr. iv.
Glycerini	ʒij.
Aq. maticæ ad	℥vj.

M.

Aq. maticæ is the distillate from infusion of matico.

Hypodermic Injections should be prepared extemporaneously. In most cases they are plain solutions of alkaloidal or other salts in distilled water, and the principal point to observe in preparing them is that all the utensils used should be sterilised by thorough washing and drying in an oven at a temperature of 220° F. The distilled water used must also be recently sterilised by boiling. If these precautions are taken, and the bottles to contain the finished solutions are also sterilised, the solutions keep for a long time if excluded from the air. Camphor, saccharin, salicylic acid, and chloroform are amongst the best non-irritant preservatives of hypodermic injections—salicylic acid being the best of all, in the proportion of half a grain to the ounce. Boric acid is useless. The practice is growing amongst medical men of having the active ingredients for hypodermic injections in the form of lamels, tabloids, tabellæ, and other compressed or dry forms, as they keep indefinitely, and an injection may be prepared from one of them placed in the barrel of the syringe. We subjoin the hypodermic doses most frequently prescribed, and from these data chemists will be able to prepare the respective solutions if the prescriber indicates the *volume* of injection he wishes to administer.

Acid. carbolic.	gr. $\frac{1}{4}$ to gr. j.
Acid. sclerotic.	gr. $\frac{1}{4}$ to gr. j.
Atropin. sulph.	gr. $\frac{1}{120}$ to gr. $\frac{1}{60}$
Cocainæ hydrochlor	gr. $\frac{1}{4}$ to gr. $\frac{1}{2}$
Hyoscin. hydrobrom. . . .	gr. $\frac{1}{250}$ to gr. $\frac{1}{120}$
Hyoscyamin. sulph. . . .	gr. $\frac{1}{120}$
Morph. tart. gr. $\frac{1}{8}$ to gr. $\frac{1}{4}$ and atrop. sulph.	gr. $\frac{1}{192}$ to gr. $\frac{1}{96}$
Physostigmin. salicyl. . . .	gr. $\frac{1}{120}$
Pilocarpin. nitrat.	gr. $\frac{1}{4}$
Quinine salts	gr. ss. to gr. ij.
Strychnine salts	gr. $\frac{1}{50}$ to gr. $\frac{1}{25}$

Injectio Curare Hypodermica, B.P.C.

Curare (South American Indian arrow poison) .	gr. v.
Distilled water .	a sufficiency

Reduce the curare to powder in such a way as to prevent its coming in contact with the naked hand, and add the water to form a thin paste. Transfer to a small funnel plugged with absorbent wool, and gradually pour upon it distilled water until 1 fl. dr. is obtained

Dose: 1 to 6 minims.

Inj. Caffeinæ Hypodermica

Caffeinæ . . .	℈j.
Sodii salicylatis .	gr. xviiss.
Aq. destillat. ad .	ʒj.

Solve.

This is Martindale's formula, and is the best for making a concentrated solution of caffeine.

Dose : 1 to 6 minims = gr. $\frac{1}{3}$ to gr. ij.

Injectio Cantharidin. (Liebreich)

Cantharidin. . . .	gr. j.
Potassæ causticæ . .	gr. ij.
Aquæ destillat. .	℥x. ʒiiiss.

Dissolve the cantharidin and potash in 2 dr. of water by heating, and dilute with the rest.

Each minim of the solution contains $\frac{1}{5000}$ gr. of cantharidin.

Dose : 8 to 16 minims for the treatment of lupus and other tuberculous affections.

If the soda salt of cantharidin is required, use caustic soda gr. iss.

Inject. Quininæ Hypoderm.

(Squire)

Quininæ hydratis .	gr. lxxvj.
Acid. lactic. . .	♏xxvij.
Aq. destill. ad .	℥j.

Rub the quinine with water ʒvj. and add just enough acid to dissolve it and form a neutral or faintly acid solution, and make up to 1 oz.

♏iv. = quin. lact. gr. j.

Insufflations, or Snuffs, are prescribed for the relief of nasal catarrh and other affections of the nose, and in the treatment of various throat disorders. In the latter case the powders are applied with instruments, such as the 'Pulverflator.' The compounds must be in extremely fine powder free from grit, and not caked ; therefore they should not be mixed in a mortar, but lightly blended on paper with a bone spatula, then passed through a sieve once or twice, using a brush for this purpose. The composition of insufflations enables them to adhere to the mucous membrane ; a gum or gum-resin is a common adhesive agent, but the most popular basis is one or other of the dry powdered soaps, such as the stearates introduced by McKesson & Robbins. These are applied *ad lib.*, but many insufflations are used in stated small quantities, being blown upon the affected surface by means of a quill or other suitable tube. Alkaloidal stearates may be made by Zanardi's method, viz. :—Morphine stearate : stearic acid, 5·68 grammes ; morphine, 5·72 grammes. Dissolve the former in 100 c.c. of absolute alcohol by warming ; to this solution add the morphine in small portions, when, on cooling, the morphine stearate crystallises out. On concentrating the mother liquor a further portion of the salt may be obtained, which should be dried between 30° and 40° C. Other alkaloidal stearates may be made in the same way by taking molecular proportions of stearic acid and of the pure alkaloid.

The following are the more frequently required insufflations of the 'Throat Hospital Pharmacopœia,' each being one application :—

Insuff. Acid. Tannic.

Pulv. acid. tannic. . .	gr. ij.
Pulv. amyli . . .	gr. ss.

M.

Insuff. Ammon. Chloridi

Pulv. ammon. chlor. .	gr. ij.
Pulv. amyli . . .	gr. ss.

M.

Insuff. Bismuthi

Bismuthi subnit. . .	gr. ij.
Pulv. amyli . . .	gr. ss.

M.

Insuff. Boracis

Pulv. boracis . . .	gr. iij.
Pulv. amyli . . .	gr. ss.

M.

Insuff. Iodoformi

Pulv. iodoform. . .	gr. j.
Pulv. amyli . . .	gr. ss.

M.

For the ear this insufflation is made with equal parts of iodoform and subnitrate of bismuth.

Subjoined are some formulas for articles of retail, as well as prescription :—

Beehag's Snuff for Catarrh

Menthol. . . .	ʒss.
Ammon. chloridi . .	ʒiss.
Pulv. acid. boric. . .	ʒj.

Rub together to a fine powder and sift.

Cephalic or Headache Snuff

I

Menthol . . .	gr. x.
Cocaine hydrochloride .	gr. v.
Sugar of milk . . .	ʒj.

Triturate for five minutes and add

Arrowroot . . .	ʒvj.
Compound tragacanth powder . . .	ʒj.

Mix and sift twice.

II

Powdered white hellebore	℥j.
Powdered bayberry .	℥ss.
Powdered orris . .	℥ss.
Powdered starch . .	℥vj.
Oil of cloves . . .	♏x.

Mix the oil with the starch, add the other powders, and sift.

III

Fine table-salt . .	℥j.
Dried sodium carbonate .	℥ij.

Mix and sift.

The first of these snuffs is the best ; the second resembles somewhat old-fashioned cephalic snuff ; and the third is a good penny cure for headache, neuralgia, and toothache.

Ferrier's Snuff

(syn. *Pulv. Anticatarrhalis*, *N.F.* : *Pulv. Bismuthi Co.*, *Martindale*, *&c.*)

The formula originated by Dr. David Ferrier in 1876.

Bismuth. subnitrat. . .	ʒvj.
Pulv. acaciæ . . .	ʒij.
Morphinæ hydrochlor. .	gr. ij.

M.

From a quarter to a half of the above to be used in the course of twenty-four hours for cold in the head.

Menthol and Cocaine Snuff

Cocainæ hydrochlor. .	gr. x.
Pulv. camphoræ . .	gr. x.
Pulv. potass. chlorat. .	ʒj.
Pulv. acid. boric. . .	ʒij.
Menthol. . . .	ʒss.–ʒj.
Pulv. lycopodii . .	℥j.

Mix and sift.

Jeroboam

Rad. rhei . . .	℥j.
Fol. sennæ . . .	℥j.
Sem. cardamom. . .	℥j.
Croci placent. . .	ʒij.
Cocci cacti . . .	ʒvij.
Ol. anisi . . .	ʒj.
Spt. tenuior. . . .	Oiv.

Macerate seven days, strain, press, and filter, making up to four pints with proof spirit.

Dose: A teaspoonful to a tablespoonful.

Lac Bismuthi

This is the trade-marked title of a preparation made by Messrs. Symes & Co. A mixture with similar properties is prepared as follows:—

Bismuth subnitrate .	gr. 800
Nitric acid, water, of each . . .	℥iij.

Dissolve and pour into a solution of

Caustic soda . .	℥iiss.
Water	Cong. ij.

stirring assiduously the while. Allow the precipitate to subside, and if the liquor is not distinctly alkaline add liq. sodæ until it is. Decant the clear liquor, and wash the precipitate several times by decantation. Transfer to a filter, and if the filtrate still gives the nitric reaction with ferrous sulphate and sulphuric acid, continue to wash the precipitate until the filtrate ceases to give the reaction. Transfer the precipitate to a mortar and add the following in their order:—

Glycerine . . .	℥ij.
Chloroform-water . .	℥v.
Triple orange-flower water	℥iij.
Water to . . .	℥xx.

Mix.

Dose: A teaspoonful (= bism. subnit. gr. v.).

A preparation is also made from dry hydrated oxide of bismuth (*see* page 463), 40 gr. to the ounce, in a mixture of mucilage of tragacanth and water (1 part and 3 parts); but it is not nearly so nice, medicinally or pharmaceutically, as the above. In it the bismuth is in an extremely fine powder, and only requires the glycerine to diffuse it.

Lac Bismuthi c̄ Cerio

To the alkaline solution in making lac bismuthi as above add a solution made by incinerating 180 gr. of cerium oxalate and dissolving the residue in ½ oz. of nitric acid. The soda solution should contain at least 3 oz. of the alkali.

Lac Magnesiæ

A preparation made by Messrs. Clay & Abraham, of Liverpool.

The following formula has been used in Edinburgh since the fifties:—

Magnes. sulph.	ʒxix.
Liq. potass.	q.s.
Aq.	q.s.

Dissolve the magnes. sulph. in water, precipitate with liq. potassæ, wash the hydrate thoroughly, and diffuse in a sufficiency of water to make 20 oz.

A Milk of Magnesia is also put up by the Phillips Pharmaceutic Company, Montreal, and is said to be a hydrated oxide of magnesium four times the strength of 'fluid magnesia.' It is probably similar in composition to the above.

Another lac magnesiæ is used on the Continent as an antidote in arsenical and phosphorus poisoning, as well as a laxative medicine. It is made by triturating 2 oz. of calcined magnesia with 10 oz. of water, boiling the mixture and dissolving in it 10 oz. of sugar, and when cold adding 5 oz. of orange-flower water.

Lac magnesiæ glycerinata is the same as the foregoing, with 2 oz. of glycerine (by weight) instead of the sugar, and no flavouring.

Laudanum, Sydenham's

(syn. *Tr. Opii Crocata*)

Saffron	ʒiij.
Powdered opium	ʒix.
Cloves, bruised	ʒvj.
Cassia, bruised	ʒvj.
Rectified spirit	℥vij.
Water	℥vj.

Macerate for seven days, shaking occasionally, strain, press, and filter.

Lac Ferri

Sodium pyrophosphate	℥ij.
Glycerine	℥v.
Solution of ferric chloride (10 per cent.)	℥iij.
Distilled water to	℥100

(All by weight.) Dissolve the soda salt in the glycerine and 2 pints of water, and dilute the iron solution with as much water. Mix the solutions and make up the weight of the mixture to 100 oz. with water.

Lapis Divinus

(*Blue Wound-stone*)

Sulphate of copper	℥j.
Nitrate of potash	℥j.
Alum	℥j.

Powder and fuse in a crucible. When molten add

Camphor	ʒss.

Mix and cast into sticks.

Lapis Miraculosus

(*Yellow Wound-stone*)

Alum. sulph.	℥xvj.
Ferri sulph.	℥xxiv.
Cupri sulph.	℥xvj.
Ammon. mur.	℥j.
Æruginis	℥ij.

Mix and fuse.

A B C Liniment

I. Ordinary

Lin. aconiti	℥j.
Lin. belladonnæ	℥j.
Lin. chloroformi	℥j.

M.

II. Clear

Camphor	℥ss.
Chloroform	℥iiss.
Liniment of aconite	℥v.
Liniment of belladonna	℥v.
Glycerine	℥ij.

Dissolve and mix.

The second is a modification proposed by Mr. T. Maben in *The Chemist and Druggist*, and it has since appeared in several books as the original. This error should be noted. Some physicians prefer pure chloroform to lin. chloroformi in the first formula.

Linimentum Album
(syn. *White Oils*)

I. Gray's

Two eggs.	
Spirit of turpentine	℥iss.
Goulard's extract	℥ss.

Mix and add gradually

Vinegar	℥xxiv.
Rectified spirit	℥iss.

Mix.

II. Jacob Bell's

Ol. terebinth. rect.	℥ij.
Liq. ammoniæ	℥ij.
Lin. saponis	℥iij.
Spt. rosmarini	℥j.
Aceti destillati	℥viij.

The ingredients to be mixed in the above order, adding the vinegar gradually and with constant agitation.

III

Eggs	xij.
Soft soap	℥vj.
Oil of turpentine	℥xx.
Strong solution of ammonia	℥v.
Acetic acid	℥iv.
Camphor	℥vj.
Spirit	℥viij.
Oil of amber or origanum	℥iv.
Water to	Oiv.

Rub up the soap with 10 oz. of water, added gradually so as to produce a smooth jelly; then mix the eggs, previously switched, with this; next the spirit with the camphor dissolved in it. Mix the turpentine and oil of amber, add gradually to the egg mixture, stirring assiduously all the while and aiding emulsification by the addition of a little water occasionally; then add the ammonia solution and when incorporated pour the mixture into a Winchester quart bottle, and having ascertained how much it measures add the acetic acid mixed with as much water as will make the whole measure 80 oz.

IV

Oil of turpentine	℥iss.
Camphorated oil	℥ij.
Acetic acid	℥j.
Yolk of one egg.	
Water	℥vj.

To the yolk of egg add the mixed oils gradually, so that a thorough emulsion may be made; then add 4 oz. of water carefully with constant stirring, and finally the acid diluted with 2 oz. of water.

V

Yolk of one egg.	
Camphor	℥j.
Acetic acid	℥iss.
Oil of turpentine	℥viij.
Nut oil	℥iv.
Oil of amber	ʒj.
Distilled water	℥ivss.

Mix the egg-yolk, acetic acid, and water together. Dissolve the camphor in the turpentine, add the other oils, then the egg mixture, and shake until a perfect emulsion is obtained.

VI

Acid. oleic.	℥j.
Ol. terebinth.	℥ix.
Liq. ammoniæ	℥iij.
Liq. potassæ	℥iss.
Aq. ad	℥xx.

Mix thoroughly by agitation in a 40-oz. bottle.

White Oils, or Linimentum Album, is one of the most popular English liniments. Originally, as 'white oils,' it was used exclusively for veterinary purposes, and that so effectually that it came to be used 'for man and beast.' A large number of formulas exist for it, and we have only attempted here to give a selection to show the evolution of the preparation, for how it originated we are unable to say. At the present time Elliman's Embrocation is the most popular liniment, and its popularity has undoubtedly assisted in creating the demand for liniments of the same character. According to Hager, the embrocation is a mixture of 50 parts each of white of egg, water, and crude pyroligneous acid, 60 parts of spirit, and 3 parts of turpentine! It is certainly nothing of the kind; but that it contains turpentine and acetic acid no one with a nose can deny. The first of the formulas is the oldest of this kind, and, as might be expected of a formula which passed the late Dr. Redwood's eye, it exhibits good pharmacy, while it is an invigorating liniment. The only thing is that it lacks 'grip' on account of its thinness, which is that of new milk. By doubling the turpentine, and making the acetum 'ad Oj.,' a better preparation is obtained. By the way, the original gave 'vinegar Oiss.,' but that was in the old wine-pint (℥xvj.) days. The second formula shows the introduction of the unscientific method, viz. combination of an alkali and a soap with an acid. The same obtains in No. III., which is a working improvement on a formula originally published in *The Chemists' and Druggists' Diary*, 1883, but in use for many years before that. Some chemists insist that both ammonia and acetic acid must be in the 'oils.' That is not our opinion; but there the formulas are for those who want them. No. IV. is an improvement upon No. I.: it is thicker and better for massaging. No. V. is a type of many super-medicated white liniments—liniments of aconite and belladonna, hazeline, spirit of nitre, laudanum, and many other things take the place of arnica, and they do no harm. Whether they do good is another story. Lastly, we have the true ammonia type of liniment, and there are as many modifications of it as of the acetic—*e.g.* No. III., without the acetic acid, is good. But, we may repeat, true 'white oils' is acetic So is 'linimentum album,' and the 'National Formulary' has the latter title as a synonym for Stokes's Liniment. The liniment should not be overloaded with essential oil, although a little, such as ol. cajuput., ol. origani, or ol. succini, helps to shade off the 'turps.'

Liniment. Æruginis, P.L.

(syn. *Mel Ægyptiacum*)

Verdigris (in powder)	℥j.
Vinegar	℥vij.
Honey	℥xiv.

Dissolve the verdigris in the vinegar, strain, add the honey, and boil to a proper [pourable] consistence.

Liniment. Amyl. Hydridi

(Dr. Bennet, of Buxton)

Ol. ricini	℥j.
Cocainæ hydrochlor.	℈j.
Menthol.	ʒj.
Chloral. hydrat.	ʒj.
Amyl. hydrid.	ʒij.
Spt. rectificat. ad	℥ij.

M.S.A.

Liniment. Arnicæ

For bruises, sprains, chilblains, stings of insects, &c.

Flor. arnicæ	℥vj.
Fol. tabaci	℥j.
Lin. camph. co.	℥xij.
Lin. saponis	℥xij.

Macerate for seven days; filter.

Liniment. Capsici

(syn. *Tr. Capsici Fort., B.P.C.; Dr. Turnbull's Tincture*)

Capsicum-fruit in No. 40 powder	℥x.
Rectified spirit	a sufficiency

Make 30 oz. of tincture by maceration and percolation.

Congreve's Liniments

(Milder)

Lin. saponis co.	ʒiiiss.
Lin. camph. co.	ʒiiiss.
Tr. belladonnæ	ʒiiiss.
Ol. cajuput.	ʒiss.

M. Ft. lin.

Sig.: Use as directed.

(Stronger)

Liq. ammon. fort.	℥ss.
Tr. belladonnæ	℥ss.
Spt. camphoræ	℥ss.
Ol. terebinthinæ	℥ss.

M.

Lady Ford's Liniment

(for Rheumatism in the Head)

One egg.	
Spirit of camphor	℥ss.
Oil of turpentine	℥j.
Vinegar to	℥xij.

Mix as Lin. Album No. 1.

To be rubbed behind the ears and the neck.

Huile de Cade Liniment

(for Psoriasis)

Ol. cadin.	℥v
Glycer. amyli, B.P. 1867	℥v.
Saponis mollis	ʒvj.
Ol. citronellæ	q.s.

Rub the oil and soap together until thoroughly mixed. Transfer to another mortar containing the glycerine and rub slowly until smooth. Then add the perfume.

Kerosene Liniment

Keroseni	℥ij.
Tr. opii	ʒiv.
Tr. arnicæ	ʒv.
Tr. stramon.	ʒiv.
Spt. amm. arom.	ʒvj.
Spt. camphor.	ʒv.
Ol. origani	ʒiv.
Chloroform.	ʒiij.

M.

Rub in twice during the twenty-four hours, or when required.

Recommended by Dr. A. C. Hobbs, of Louisville, for sprains, bruises, soreness of the muscles from any cause, as well as for nervine pains.

Leslie's Magic Liniment

Lin. aconiti	℥ss
Lin. belladonnæ	℥ss.
Lin. saponis	℥ss.
Tr. opii	℥ss.

M.

For muscular pains, neuralgia, &c. Sells (methylated) in 2-oz. bottles at 1*s.* 6*d.*

Magnetic Liniment

Ol. terebinth.	℥ix.
Tr. capsici	℥xij.
Spt. camphor.	℥xcvj.
Liq. ammon. fort.	℥ix.
Spt. rectificat.	℥xviij.
Ol. sassafras	℥ss.

M.

A good speciality liniment.

Liniment. Menthol.

(Martindale)

Menthol.	ʒiij.
Chloroform.	℥ss.
Spt. rectificat. ad	℥ij.

M.

Menthol Opodeldoc

Sapon. mollis	gr. xx.
Camphor.	gr. viij.
Menthol.	gr. ij.
Aq. destil.	ʒij.
Tr. arnicæ ad	℥j.

Macerate for a day, then filter.

Linimentum Opii Ammoniatum, B.P.C.

(A Substitute for *Bow's Liniment*)

Soap liniment	℥vj.
Compound camphor liniment	℥vj.
Tincture of opium	℥vj.
Belladonna liniment	℥j.
Stronger solution of ammonia	℥j.

Mix, allow to stand for a week, and filter.

The above gives a preparation closely resembling the original Bow's Liniment. In Scotland imitations of this proprietary article are sold by chemists by the ounce, the recognised shop formula being

Opium	℥iiss.
Soap	℥iss.
Compound camphor liniment	℥xx.

Macerate for a week and filter.

The liniment contains very little morphia, because the alkaloid is insoluble in ammonia. The marc is therefore valuable, and the precipitate filtered out in the first formula is crude morphia.

Linimentum Nigrum

Rectified spirit	℥ij.
Tincture of arnica	℥ij.
Oil of tar	℥ij.
British oils	℥ij.

Mix, and add with great caution and constant agitation

Sulphuric acid	℥ss.

Lin. Picis

(Lassar's)

Ol. picis lig.	℥iv.
Ol. rusci	℥iv. .
Ol. olivæ	℥j.
Spt. tenuior.	℥j.

M.

Lin. Plumbi Lactatis

Cremor. lactis.	℥xvj.
Acid. salicylic.	ʒss.
Liq. plumbi subacet.	℥ij.

M.

Lin. Opii Compositum, N.F.

(syn. *Canada Liniment*)

Tincture of opium	℥iss.
Camphor	ʒij.
Rectified spirit	℥iv.
Oil of peppermint	ʒiij.
Solution of ammonia	℥vj.
Oil of turpentine to.	℥xvj.

Dissolve the camphor and oil of

peppermint in the spirit, then add the tincture of opium, ammonia, and oil of turpentine.

This liniment separates into two portions a short time after it has been mixed. It may be made somewhat more permanent by adding tincture of quillaia ʒiij. to the ammonia before adding the latter to the mixture.

Liniment. Roseni

Ol. myristicæ express. .	℥ss.
Ol. caryophylli . .	℥ss.
Spt. juniperi . . .	℥x.

Mix the oils and add the spirit gradually to make a uniform mixture.

Liniment. Scopolæ

Prepared from scopola rhizome in the same manner as Lin. Belladonnæ, B.P.

Stokes's Liniments. The late Dr. Stokes, of Dublin, whose name is indelibly associated with medicine in connection with the peculiar breathing known as Cheyne-Stokes respiration, was the originator of two liniments about which there has been a good deal of confusion. The original prescriptions are—

I

Stokes's Chest-liniment

Morphiæ acet. . .	gr. vj.
Chloroform. puri . .	ʒj.
Lin. saponis ad . .	℥iij.

M. Ft. lin. venena.

To be rubbed into the chest, back and front, every night.

II

Stokes's Rheumatic Liniment

Ol. terebinthinæ . .	ʒiss.
Acid. acetic. . . .	ʒiss.
Ovi vitelli . . .	unius
Olei limonis . . .	℈j.
Aquæ rosæ ad . .	℥viij.

M. Ft. lin.

To be rubbed into affected joints.

The second formula closely resembles the liniment generally known as St. John Long's Liniment, which is given under that title, and as lin. terebinth. acet., lin. album, and Stokes's Liniment in the 'National Formulary.' 'Beasley' also gives it in the same proportions as subjoined (No. III.):—

III

Oil of turpentine . .	℥iij.
Acetic acid . . .	ʒv.
Rose-water . . .	℥iiss.
Essence of lemon . .	ʒj. ♏xx.
Yolk of an egg.	

Mix.

IV

(Used in the North of Ireland)

Turpentine . . .	℥v.
Acetic acid . . .	℥v.
Yolk of one egg.	

Mix thoroughly.

It will be seen that No. II. and No. III. differ materially. Lin. terebinth. acetic., B.P., is an imitation of St. John Long's Liniment, but the custom of giving No. III. for it has not broken down yet.

Linim. Succini

I

Camphoræ	℥iij.
Ol. caryoph.	℥j.
Ol. succin. rect.	℥iij.
Ol. olivæ opt.	℥xx.
Liq. ammon. fort.	℥iss.
Aquæ	℥xv.

Digest the camphor in the essential oils until dissolved, then add the olive oil, shake well, add the ammonia, and, lastly, the water, shaking well together.

A cream-coloured 'white liniment' for whooping-cough and chest-complaints generally. Also a good 'rubbing-bottle' for sprains, rheumatism, and the like.

II

(Squire's)

Ol. succini	℥j.
Spt. camphoræ	℥i.
Liq. vol. c.c.	℥j.

M.

Liniment. Stimulans

(for Lumbago, Rheumatism, &c.)

Ether	ʒj.
Liniment of belladonna	℥ss.
Tincture of capsicum to	℥ij.

Mix.

Directions.—To be well rubbed into the painful parts night and morning.

Liniment. Whitworth.

(syn. *Whitworth's Drops*, *Whitworth's Red Rub*, *Red Bottle*)

Rectified spirit	℥ij.
Comp. tinct. of lavender	℥j.
Oil of origanum	ʒij.

Mix.

The formula used in the neighbourhood of Whitworth, Lancashire, is

Camphoræ	℥vj.
Ol. origani	℥vj.
Rad. anchusæ	℥j.
Spt. meth. ad	Oiv.

Macerate a few days and filter.

Another Lancashire formula :

Camphor.	℥ij.
Tr. lavand. co.	℥j.
Ol. origani	℥j.
S.V.M. ad	Oj.

M.

A formula containing brandy :

Ol. origani	℥j.
P. cocci cacti	q.s.
Sp. vini gallici	Oj.

Macerate for a few days and filter.

Methylated spirit may not be used without express authority of the Excise.

Liquor Acidi Phosphorici Comp., N.F.

(*Solution of Acid Phosphates*)

Bone ash (in fine powder)	1,000 grammes
Sulphuric acid (s.g. 1·830)	780 grammes
Water	4,000 c.c.

Mix the bone ash with a litre of water, add the sulphuric acid, diluted with 2 litres of water, and mix thoroughly with a porcelain or glass stirrer. Now add the remainder of the water and set the mixture aside for twenty-four hours, stirring occasionally. Then transfer the mixture to a strong cotton strainer and subject to a gradual pressure (avoiding contact with metals) so as to express as much of the liquid as possible. Lastly filter through paper.

The specific gravity of this solution is about 1·113 at 15° C. (59° F.).

Liquor Aluminii Acetatis, N.F. and Ph.G.

Aluminium sulphate, crystallised . .	300 grammes
Acetic acid (U.S.P.)	300 grammes
Calcium carbonate .	130 grammes
Water . .	1,000 c.c.

Dissolve the calcium carbonate in the acetic acid mixed with 200 c.c. of water, and the sulphate of aluminium in 800 c.c. of water. Mix the two solutions and allow the mixture to stand for twenty-four hours, agitating occasionally. Then pour off the clear solution and filter.

The solution contains from 7·5 to 8 per cent. of basic acetate of aluminium.

Liq. Ammonii Anisatus, Ph.G.

Oil of anise .	by weight	1 part
Rectified spirit	by weight	24 parts

Dissolve and add

Solution of ammonia .	by weight	5 parts

Mix.

Liquor Anthracis Simp.

Coal tar	℥iij.
Benzol	℥vj.
Rectified spirit . .	℥vj.

Mix and heat at 35° C. for twenty minutes; then add

Potassium sulphide . .	℥iss.
Soda solution (15 per cent.)	℥iss.
Rectified spirit . .	℥vj.

Again heat for twenty minutes and set aside for a week; then decant the clear liquor.

All the ingredients to be taken by weight.

Liq. Anthracis Co.

Resorcin . . .	℥iij.
Salicylic acid . . .	ʒv.

To be added to the alkaline liquor in the preceding formula.

Liq. Arsenii Bromidi, N.F.

(syn. *Liq. Potass. Arseniat. et Bromidi*, *Clemens' Solution*)

Arsenious acid	10 grammes or ʒiiss.
Potassium bicarbonate .	10 grammes or ʒiiss.
Bromine .	15·5 grammes or ʒiiiss. gr. xxiij.
Water to .	1,000 c.c. or ℥xxxiv.

Dissolve the acid and bicarbonate in an eighth of the water by boiling, add three-fourths of the water and the bromine, and make up to the required volume. After a few hours filter.

Contains 1 per cent. of arsenious acid.

Dose: 1 to 5 minims.

Liq. Auri et Arsenii Bromidi, N.F.

Arsenious acid .	2·5 grammes
Tribromide of gold .	3·25 grammes
Bromine-water .	a sufficiency
Distilled water .	a sufficiency

Dissolve the arsenious acid in 125 c.c. of bromine-water by heat; when the bromine colour has disappeared add more bromine-water, 20 to 30 drops at a time, until it ceases to be absorbed. Then heat in an evaporating-dish to dispel excess of bromine, make up to 900 c.c. with water, and dissolve the tribromide of gold in enough distilled water to make the mixture measure 1,000 c.c.

R. Wright's Formula

Arsenious acid (in powder) . . .	40 gr.
Potassium carbonate .	40 gr.
Bromine . . .	100 gr.
Gold (in leaf) . .	13½ gr.
Distilled water sufficient for	1 pint

Place the arsenious acid and potassium carbonate with 4 oz. of the water in a flask, and boil until solution is complete. Weigh out the gold leaf and place in a wide-mouthed bottle, add 12 oz. of distilled water, then run in the bromine, and shake until the latter is dissolved. Add the solution previously made and shake for a few seconds. Transfer to a flask or retort, and boil until bromine fumes cease to be given off. Allow to cool, dilute with distilled water to 1 pint; filter.

Distilled water alone should be employed, as the arsenium compounds formed precipitate lime and magnesia existing in tap-water.

Liquor Bismuthi

(Cowley and Catford's Formula)

Subnitrate of bismuth	70 grms.
Citric acid	50g rms.
Nitric acid	50 c.c.
Bicarb. of potash	103 grms.
Solution of ammonia and distilled water, of each	a sufficiency

Heat the subnitrate with the nitric acid until dissolved, add the citric acid dissolved in 1 oz. of hot water. Add gradually the bicarbonate dissolved in 3 oz. of water, stirring well. Dilute with hot water to 1 litre, cool, collect the precipitate on a filter, and wash free from nitrate. Pour upon the filter a mixture of liquor ammoniæ 60 c.c. and water 140 c.c., returning the filtrate until the whole of the precipitate is dissolved. Make up to 1 litre.

NOTE.—The above gives a solution of B.P. strength. A solution more resembling Schacht's is obtained by adding to 20 oz. of it liquor. ammon. cit. fort. ʒvj., aq. destil. ℥viij.

Liq. Bism. Conc., B.P.C., is made similarly. Quantities: Bism. subnit. 1 oz., ac. nit. 5 oz., ac. cit. 5 oz., sod. bicarb. 8¾ oz., liq. amm. 6 oz., liq. amm. cit. 12 oz., aq. q.s. Product, 50 oz.

Liquor Bismuthi Co.

(syn. *Mist. Bismuthi Co.*)

Liq. bismuthi (B.P. 1867)	℥xvj.
Spt. chloroformi	℥iv.
Tr. nucis vomicæ	℥ij.
Acid. hydrocyan. dil.	ʒiv.
Tr. cardam. co.	℥iv.
Morphinæ hydrochlor.	gr. iv.

M.

Dose: A teaspoonful.

If liq. bismuthi B.P. 1885 is used, 2 oz. of the distilled water in it should be replaced by liq. ammon. cit.

Mist. Bismuthi Co., B.P.C., contains morph. mur. gr. viij., tr. card. co. ℥iij., chloroform. ♏70, ext. nuc. vom. liq. ♏135, ac. hydrocy. dil. ♏320, and liq. bism. conc. ℥xv. aq. dest. ad ℥xx. Dose: 20 to 30 minims.

Liquor Bismuthi Co. c̄ Pepsin.

Pepsin. (in scales)	ʒiij.
Liq. bismuthi co.	℥xx.

Dissolve and filter.

The following is also good if made with liq. bismuthi, 1867. Otherwise omit the hydrochloric acid, dissolve the pepsin in the water, mix with the rest of the ingredients, and filter after four days:—

Pepsin.	ʒiij.
Acid. hydrochlor. dil.	ʒiij
Acid. hydrocyan. dil.	℥ss.
Ext. opii liq.	℥j.
Spt. chloroform.	℥ij.
Tr. nucis vom.	℥ij.
Liq. bismuthi	℥x.
Liq. cocci	q.s.
Aq. ad	℥xx.

Digest the pepsin with ac. hydrochlor. and aq. ℥iv. for two days: decant the clear portion, which reserve; filter the remainder, wash with water until the filtrate and reserved portion measure ℥v. Add the liq. bism. and sufficient cochineal to colour, then the rest of the ingredients, and water to the required volume. Set aside for four days, and, if necessary, filter.

Liquor Bromi, N.F.

(syn. *Smith's Solution of Bromine*)

Bromine	℥v.
Potassium bromide	℥iiss.
Water	℥xx.

Dissolve the bromide in the water, add the bromine, and shake until dissolved.

Liq. Boracis Co.

(syn. *Liq. Sod. Borat. Co., N.F.; Dobell's Solution*)

Borax	ʒij.
Bicarbonate of soda	ʒij.
Carbolic acid	gr. xxiv.
Glycerine	℥ss.
Water to	℥xvj.

Dissolve the salts in half the water and the acid in the glycerine, mix the solutions, make up to 16 oz. with water, and filter.

Liquor Calcis Sulphuratæ, N.F.

(*Vleminck's or Vlemmingk's Solution*)

Slaked lime	℥xviss.
Sublimed sulphur	℥xxv.
Water	Cong. j.

Boil for about half an hour, or until, on filtration, 100 oz. of solution is obtained. Should be made in an enamelled or porcelain dish.

Liquor Carmini, N.F.

Carmine	ʒj.
Solution of ammonia	ʒvj.
Glycerine	ʒvj.
Water to	℥ij.

Triturate the carmine with the ammonia, add the glycerine, mix thoroughly, and heat the mixture on a water-bath until free from the odour of ammonia. Cool and add water to 2 oz.

Liq. Caulophylli et Pulsatillæ

Caulophyllum-root (blue cohosh)	℥x.
Pulsatilla	℥x.
Rectified spirit	a sufficiency
Water	a sufficiency

Macerate the coarsely ground drugs in 3 pints of rectified spirit for forty-eight hours and transfer to a percolator. Reserve the first 12 oz. of percolate and continue percolation with 3 pints of water. Recover the spirit from this percolate and evaporate to 8 oz. Mix this with the reserved portion, acidify with dilute sulphuric acid ʒss., set aside for a day, and filter.

Liquor Copaibæ Solubilis

Copaiba	℥xx.
Solution of potash	℥xxx.
Water	℥x.

Boil the copaiba and solution of potash for an hour, add the water, and mix thoroughly. Set aside until cold and well separated, draw off the clear liquor from the upper oily portion and sediment, and evaporate it to 38 oz.; to this add 2 oz. of solution of potash.

Franks's Specific

Liq. copaibæ sol.	℥v.
Spt. æther. nit.	℥j.

M.

Liq. Copaibæ, Buchu, et Cubeb

I

Ext. buchu liquid.	℥ij.
Ext. cubebæ liquid.	℥ij.
Liq. copaibæ sol.	℥xvj.

M.

II

Cubebs . . .	℥iv.
Rectified spirit . .	℥xvj.

Macerate six days, then add

Solution of potash . .	℥iv.

Continue maceration for a day, filter, and add

Soluble copaiba . .	℥xv.
Conc. infusion of buchu (1–3)	℥xvj.

Allow to stand for three days, and filter through a wetted filter-paper. If not bright, add some mag. carb. lev. and again filter.

Liq. Copaibæ, Buchu, et Cubebæ c̄ Matica

Ext. maticæ liq. . .	℥ij.
Liq. cop., buchu, et cub.	℥x.
Liq. copaibæ sol. . .	℥viij.

M.

The liquid extracts in the above formulas are proof-spirit 1-in-1 preparations made by repercolation.

Liq. Copaibæ, &c., c̄ Santal.

Ol. santal. flav. . .	℥ij.
Spt. rectificat. . .	℥ij.
Liq. copaibæ, &c. . .	℥xvj.

Mix in the above order.

Sometimes these liquors are flavoured with cinnamon or other essential oil in the proportion of 5 to 10 minims to the ounce.

Liquor Croci

Cut saffron . . .	℥j.
Glycerine . . .	℥v.
Rectified spirit . .	℥xv.

Exhaust with the spirit by maceration, and add the glycerine.

Liquor Doveri

Morphin. acetat. . .	ʒj.
Acid. acetic. dil. . .	℥j.
Vin. ipecacuanhæ . .	℥ij.
Spt. tenuior. . . .	℥vij.

Dissolve the acetate in the acid, add the other fluids, and after twenty-four hours filter.

Dose: ♏x. to ♏xx. at bedtime.

Liquor Eastoni pro Syrupo

Iron wire . .	ʒiiss.
Phosphoric acid, s.g. 1·5	℥ij. ʒvj.
Water	℥iij.

Dilute the acid with the water in a flask, add the wire, and heat gently until dissolved; add hypophosphorous acid ʒss., strain at once, and add to

Powdered strychnine .	gr. x.
Phosphate of quinine .	ʒiv.
Water	℥iij.

Dissolve, filter, and wash the filter with water to make the filtrate measure 10 oz.

One part of this solution to 3 parts of thick syrup makes Easton's Syrup.

Liquor Ergotæ Ammoniat.

I

Ergot (in coarse powder)	℥xx.
Strong solution of ammonia . . .	℥j.
Water	Ov.

Mix the ammonia with the water and macerate the ergot in a third of the mixture overnight. Strain in the morning and repeat the cold infusion with half of the remaining ammoniated water for four hours. Do this a second time, mix the strained liquors, and evaporate to 10 oz. To this add

Aromatic spirit of ammonia . . .	℥x.

Allow the liquor to settle, decant the clear portion, and filter the rest, washing the filter with the aromatic spirit to make 20 oz. of liquor.

This liquor may also be made by

repercolation with a menstruum consisting of

Solution of ammonia	℥j.
Water	℥vij.
Rectified spirit	℥xij.

II

Crushed ergot	1 lb.
Strong solution of ammonia	℥j.
Rectified spirit	℥iv.
Water	q.s.

Moisten the ergot with a mixture of the ammonia, ℥ij. of spirit, and ℥vij. of water; pack and after twelve hours percolate with the remainder of the mixture. Add water to the marc until ℥x. of percolate is obtained, which reserve. Percolate with other ℥xx. of water, evaporate to ℥iv. Dissolve in the reserved portion, add the remainder of the spirit, and filter.

Note.—Evaporation may be avoided by the process of repercolation with the same menstruum.

Liq. Euonymini Sol.

B.P. euonymin	ʒviij.
Solution of potash	℥ij.
Warm water	℥xiij.
Rectified spirit	℥v.

Mix the water with the solution of potash and triturate the euonymin gradually with it. When cold transfer to a bottle, wash out the mortar with the spirit, and add the washings to the bottle. Macerate three days and filter.

ʒj. = euonymin. gr. iij.

Liq. Euonymin. et Bismuthi

Liq. euonymini sol.	℥ij.
Liq. bismuthi co.	℥xviij.

Mix and filter after a day.

Liq. Euonymini et Bismuthi c̄ Pepsin.

As above, with liq. bismuthi co. c̄ pepsin.

Liq. Euonymini c̄ Cascara

Liq. euonymin. sol.	℥iv.
Elixir. cascar. sagrad.	℥xvj.

M.

Liq. Euonymi et Pepsin. Co.

Euonymus-bark	℥v.
Coriander-seeds	℥j.
Rectified spirit	℥vj.
Water	℥vj.

Exhaust the drugs, coarsely powdered, by percolation with the mixed liquids until 12 oz. of percolate is obtained, and add

Comp. tincture of cardamoms	℥ij.

Then add the following solution:—

Scale pepsin	ʒij.
Water	℥j.
Glycerine	℥v.

Set aside for two or three days to settle, decant the clear portion, and filter the rest.

Note.—The average dose of these euonymin liquors is 1 fl. dr.

Liquor Ferri Albuminati

There are numerous formulas for this preparation, including one in the German Pharmacopœia, which is not quite satisfactory. The following directions by Dieterich and Barthel are, on the whole, the best. The quantities must all be taken by weight:—

Dialysed iron	12 oz.
Distilled water, 50° C.	400 oz.

Mix.

Then make a solution of

Dried egg albumen	3 oz.
Distilled water	400 oz.

Warm to 50° C. and pour into the iron solution, constantly stirring. Neutralise the mixture with solution of soda, collect the precipitate on cotton twill, and wash until free from chloride (as judged by the wash-water giving no precipitate with silver-nitrate solution). Drain the precipitate, transfer it to a tared gallon bottle, and add

Solution of soda, s.g. 1·17 ½ oz.

Shake or stir well until solution is complete, then add

Rectified spirit . .	15 oz.
Cinnamon-water . .	10 oz.
Aromatic tincture . .	ʒij.

previously mixed. Finally add distilled water to bring up the weight to 100 oz.

Liq. Ferri Hypophosph. Fort., B.P.C.

A solution of ferric hypophosphite, made by mixing aqueous solutions of ferric chloride 1,000 gr. and sodium hypophosphite 1,100 gr. The precipitate is collected on calico and washed until free from chloride. It is then dissolved in the following:—

Strong solution of ammonia . . .	360 mins.
Citric acid . . .	800 gr.
Distilled water . .	5 oz.

After filtering, the iron strength of the solution is determined by precipitation of 10 c.c. with liq. potassæ, igniting the precipitate, and weighing it. The weight in grammes, multiplied by 137·1, gives the strength per oz. Add water to make the solution 40 gr. per oz.

Dose: 10 to 30 minims.

II

The 'National Formulary' gives two formulas. The first is made by precipitation of ferric hypophosphite from a solution of iron alum 330 grammes in 1½ litre of water by a solution of sodium hypophosphite 220 grammes in the same volume of water. The washed and drained precipitate is then stirred in a mortar with potassium citrate 215 grammes to make a smooth paste. Glycerine 150 c.c. is then added, and water to a litre, the solution set aside in a cold place for several days, then filtered from any crystals which have formed. In the second formula the solution is made from dry ferric hypophosphite 165 grammes, potassium citrate 215 grammes, glycerine 150 grammes, and water to 1 litre, the hypophosphite being rubbed with 300 c.c. of water before the glycerine is added. Otherwise the procedure is the same as in the latter part of the first formula.

Liq. Ferri et Mangan. Phosphat.

Sulphate of iron . .	168 gr.
Sulphate of manganese .	113 gr.
Phosphate of soda . .	247 gr.
Glacial phosphoric acid	ʒvj.
Distilled water .	a sufficiency

Dissolve 150 gr. of the sodium phosphate in 2 oz. of hot water, and the iron salt in 1 oz., mix and add bicarbonate of soda to the mixture until effervescence ceases. Then add a pint of warm water and throw the precipitate on a filter; wash well. Dissolve the remainder of the sodium phosphate in 2 oz. of hot water, and the manganese sulphate in 1 oz. Mix and proceed as with the iron salt. To the moist precipitates add the glacial acid, dissolve, add distilled water to 2 oz., and filter.

ʒj. = 4½ gr. ferri phos. and 3 gr. mangan. phos.

Liquor Ferri Iodidi

Iron wire, cut small .	℥j.
Iodine	℥ij.
Water	℥ij.

Place the iron and iodine in a flask and add the water; warm gently to start the action, and set aside until action ceases and the whole of the iodine is combined.

Decant, add 1 dr. of concentrated hypophosphorous acid, filter, and wash the filter with water which has been used to wash out the flask. Product ℥iv.

One volume of this solution to 7 volumes of thick syrup makes syr. ferri iod., B.P.

NOTE.—The N.F. liquor is made from iron 200 grammes, iodine 664 grammes, diluted hypophosphorous acid (10 per cent.) 25 c.c., and water to 1 litre in the above manner. It contains about 85 per cent. of FeI_2, and 1 volume of it to 7 volumes of syrup makes syr. ferri iod., U.S.P.

The German and Russian Pharmacopœias require the liquor to contain 50 per cent. of ferrous iodide (41 gr. of iodine in each 100 fl. gr. of finished solution).

Liq. Ferri Peptonati

Solution of dialysed iron .	ʒiv.
Distilled water . .	℥ix.

Mix.

Pure dry peptone . .	ʒj.
Distilled water .	℥ix.

Dissolve and add the iron solution to it. Neutralise the clear liquor exactly with solution of soda, and wash the precipitate by decantation; then collect it on a twill filter and wash until free from chloride. Then transfer to a dish, warm on a water-bath, and promote solution by the addition of three to five drops of diluted hydrochloric acid. Next add

Rectified spirit . .	ʒiij.
Brandy	ʒvj.
Water to . . .	℥ivss.

Filter if necessary.

This formula is an improved one by Dieterich.

Liquor Ferri Oxysulphatis, N.F.

Sulphate of iron . . .	ʒv.
Nitric acid . . .	ʒv.
Distilled water to . .	℥iv.

Dissolve the sulphate in 3½ oz. of the water by boiling. Add the acid, and continue the heat until chemical action ceases. When cold make up with distilled water to 4 oz.

Liq. Ferri Subsulphatis, U.S.P.

(syn. *Monsel's Solution*)

Ferrous sulphate (in clear crystals) .	675 grammes
Sulphuric acid .	65 grammes
Nitric acid . .	a sufficiency
Distilled water .	a sufficiency

Add the sulphuric acid to 500 c.c. of water contained in a large porcelain dish. Heat to 100° C. nearly and add nitric acid 65 grammes. Next add the ferrous sulphate a quarter at a time, stirring after each addition until effervescence ceases. Add a few drops of nitric acid, and if this causes a further evolution of red fumes continue to add the acid, a few drops at a time, until the evolution of red fumes ceases, and the solution assumes, on boiling, a ruby-red colour, and is free from nitrous odour. Finally add distilled water to make the product weigh 1,000 grammes.

Used as a styptic, but also given internally in doses of ♏v. to ♏x.

Ferri subsulphas, *Ferri oxypersulphas*, *or Monsel's Salt* is made by evaporating and scaling the above solution.

Liquor Guaiaci Alkalinus

Guaiacum resin . .	ʒv.
Carbonate of potash .	ʒiij.
Pimento	ʒij.
Proof spirit . . .	Oij.

Macerate for five days and filter.

Liquor Hypophosphitis Comp.

(Dr. Frederick Churchill)

I. Gibson's Formula

Ferrous sulphate .	2 oz. 382 gr.
Sodium sulphate .	5 oz. 364 gr.
Magnesium sulphate	2 oz. 22 gr.
Calcium hypophosphite . . .	6 oz. 112 gr.
Hypophosphorous acid (30 per cent.)	½ oz.
Water . . .	50 oz.

Dissolve the hypophosphite in the water by heating; bring to the boil; add the acid and the sulphates, stirring assiduously for two or three minutes. Pour on a paper filter and wash with water to 70 oz.; then add to the following solution:—

Calcium hypophosphite . .	3 oz. 365 gr.
Hypophosphorous acid . . .	5 oz.
Distilled water .	25 oz.

Set aside in a cold place for several days and filter.

II. B.P.C.

Hypophosphite of calcium . . .	320 gr.
Hypophosphite of sodium . . .	320 gr.
Hypophosphite of magnesium . . .	160 gr.
Strong solution of hypophosphite of iron . . .	6 fl. oz.
Hypophosphorous acid, 30 per cent. .	½ fl. oz.
Distilled water . .	a sufficient quantity

Dissolve the hypophosphites of calcium, sodium, and magnesium in 12 fl. oz. of distilled water; add the solution of hypophosphite of iron and the hypophosphorous acid. Filter and make up to 1 pint by the addition of distilled water.

ʒj. = sodii et calcii hypophos. āā gr. ij., mag. hypophos. gr. j., and ferri hypophos. gr. iss.

Dose: ½ to 2 fl. dr.

NOTE.—Gibson's formula is a good one for making the solution straight from the one hypophosphite. Otherwise the B.P.C. one is, on the whole, more convenient. *Liq. hypophosphitum, N.F.*, is a solution of calc. hypoph. 35 grammes, sod. hypoph. 20 grammes, potassium hypoph. 17·5 grammes, and citric acid 16 grammes in sufficient distilled water to make 1 litre.

Liq. Iodi Carbolatus

(syn. *Boulton's Solution*, *French Mixture*)

Tr. iodi co. (U.S.P.)[1] .	♏cx.
Acid. carbolic. . .	♏xl.
Glycerini . . .	℥iiss.
Aq. dest. ad . . .	℥xvj.

Mix the liquefied acid with the glycerine, then add the tincture and the water. Expose the solution to the sunlight until it becomes colourless.

Liquor Iodi Causticus

(Churchill), N.F.

Iodine	℥j.
Potassium iodide . .	℥ij.
Distilled water . .	℥iv.

Dissolve.

Liquor Iodi Glycerinus

(Morton's)

Iodine	gr. x.
Potassium iodide . .	ʒss.
Glycerine . .	℥j.

Dissolve.

NOTE.—It is advisable to dissolve the iodine and iodide in about ½ dr. of water before adding the glycerine (ʒviiss.).

---

[1] Iodi gr. xv., pot. iod. gr. xxx., in S.V.R. ℥j.

Liquor Lugol.

Liquor iodi, B.P., is generally given for Lugol's Solution ; but the fact may be recalled that Dr. J. G. A. Lugol, the French physician who about sixty years ago did much to popularise the use of iodine in scrofulous affections, wrote several prescriptions for iodine solutions. As a matter of historic interest we quote the subjoined, from an MS.. by Dr. John Davy (brother of Sir Humphry Davy):—

' *Solution of Iodine for internal use*

	No. 1	No. 2	No. 3
Iode . .	gr. ij.	gr. iij.	gr. iv.
Iodure de pot.	gr. iij.	gr. vj.	gr. viij.
Eau dist. .	lb. j.	—	—

' Dr. L. uses this for the eyes rather than the ointment. It should be injected under the lids with a little syringe.

Solution iodurée rubefiante

Iode	ʒiv.
Iod. de pot. . . .	℥j.
Eau d.	℥vj.

' It should be kept in a bottle with a glass stopple. He uses it to incite scrofulous ulcers of all kinds, and for caries.'

Liq. Magnes. Sulphat.

(Henry)

Saturate any quantity of water with Epsom salts at the normal temperature, and to every 7 oz. of the solution add 1 oz. of diluted sulphuric acid ; then filter. [The quantities are : Mag. sulph. ℥xij., ac. sulph. dil. ℥iij., aq. ad ℥xxiij.]

Dose : ℥ss. in a wineglassful of water every half-hour until the desired effect is produced.

NOTE.—℥ss. = mag. sulph. ʒij. and acid. sulph. dil. ʒss. The formula originated with Dr. James Henry, who communicated it to the *Edinburgh Medical and Surgical Journal*, January, 1834.

Liq. Morphiæ Citratis

I. Porter's

Opium	℥iv.
Citric acid . . .	℥ij.
Boiling water . . .	℥xvj.

Digest for a day and filter.

II. N.F.

Morphine (alkaloid) .	gr. xvj.
Citric acid . . .	gr. xij.
Cochineal . . .	gr. ss.
Rectified spirit . .	ʒj.
Distilled water to . .	℥j.

Triturate the solids with the S.V.R. and 7 dr. of water, filter, and pass enough distilled water through the filter to make 1 oz.

The first is a formula introduced early in the present century as *Liquor morphii citratis*. The second is an American refinement of it. Neither of them is stable, but the first with 4 oz. of rectified spirit in place of as much water is called *Liquor Porteri*.

Liquor Morphinæ Hypoderm.

(Magendie's), N.F.

Morph. sulphat. . .	gr. vj.
Aq. dest. . . .	℥j.

(French)

Morph. acet. . . .	gr. xiiss.
Aq. dest. . . .	℥j.

Dissolve the morphine salt in the warm distilled water (using a little dilute acetic acid with the acetate), and filter.

Liquor Opii Sedativus

Opium (10 per cent.) .	℥ij.
Slaked lime . . .	ʒij.
Rectified spirit . .	℥v.
Finest sherry . . .	℥j.
Water . . .	a sufficiency

Boil the opium (in small pieces) and lime in 15 oz. of water for half an hour and allow to cool. Make up to 14 oz. with water, add the spirit and sherry. Filter, press the marc, and add proof spirit to make 20 oz. Set aside for six months to mature and filter.

NOTE.—This gives a liquor of fine aroma and splendid therapeutic effect, but it must be allowed the time to mature, otherwise it lacks aroma, and the objectionable alkaloid is not wholly precipitated.

Liquor Pancreaticus

The name applied by Messrs. F. B. Benger & Co. (Limited) to a preparation described by Sir Wm. Roberts, and made by macerating with occasional agitation pancreas, freed from fat, and cut small, in four times its weight of a mixture of rectified spirit 1 part and water 3 parts, and filtering at the end of a week. The 'National Formulary' gives the following :—

Pancreatin, N.F. .	128	gr.
Bicarbonate of sodium	384	gr.
Glycerine . .	4	oz.
Compound spirit of cardamom, N.F.	½	oz.
Rectified spirit .	½	oz.
Purified talc . .	120	gr.
Water to . .	16	oz.

Triturate the pancreatin and the bicarbonate of sodium gradually with 10 oz. of water; add the S.V.R., compound spirit of cardamom and purified talc; shake and pour the mixture upon a wetted filter, returning the first portions of the filtrate until it runs off clear. Wash the filter with enough water to obtain 12 oz. of filtrate. To this add the glycerine.

Liquor Pepsin.

(Scheffer)

Six pounds of the mucous membrane of pigs' stomachs is macerated for thirty-six hours in a mixture of glycerine 4 lbs., water 64 oz., and hydrochloric acid 6 oz., after which the liquor is strained and the membrane again macerated for three hours in water 48 oz., maceration being continued in this manner until 160 oz. of strained liquor is obtained. This is allowed to stand for a few days, and is then filtered with the aid of kieselguhr or fullers' earth.

This method of making pepsin solution is now historic, and in various modified forms is still followed by several manufacturers. It provides a solution of the gastric juice. Liquor pepticus (Benger) is understood to be made upon this principle, but with a different menstruum (weak spirit flavoured with chloroform). Since Scheffer's process was first made public the quality of pepsin has much improved, and the best makes of scale pepsin exhibit the gastric ferments in an almost unaltered condition, and they may with advantage be used in the following manner :—

Pepsin.	ʒiv.
Acid. hydrochlor. dil. .	ʒiij.
Glycerini . . .	℥iij.
Spt. rectificat. . .	℥j.
Aq. chloroformi . .	℥iv.
Aq. destillat. ad . .	℥xx.

Dissolve the pepsin in 10 oz. of the water to which the acid has been added, add the rest of the ingredients except the glycerine, allow to stand overnight, filter through a wetted filter sprinkled with French chalk, then add the glycerine.

Liq. Pepsin. et Euonymi

Tr. euonymi . . .	ʒiiss.
Liq. pepsin. (as above without spirit) . .	℥xviiss.

M.

Other hepatic stimulants may be combined with the pepsin liquor in the same manner.

Liquor Peptonati

See Liq. Ferri Peptonati. If required 'cum mangano' add 1 oz. of manganese glycosate to each 19 oz. The glycosate is made thus: Dissolve potassium permanganate 87 gr. in water 12 oz., and add at 60° C. glucose 50 gr. dissolved in water. Mix, allow the precipitate to subside, decant, wash, collect on calico, press and mix the precipitate with glucose ʒx., then warm on a water-bath with sufficient soda solution (1 in 4) to make a clear solution, add rectified spirit ʒiss. and water to 3 oz.

Liquor Phosphatum Comp.

Polished iron wire	300 gr.
Phosphoric acid, s.g. 1·500	7 oz.
Distilled water	6 oz.

Mix the water and acid and dissolve the iron wire in the mixture by applying a gentle heat; filter through calico into a solution made as follows:—

Precipitated chalk	960 gr.
Carbonate of potash	72 gr.
Phosphate of soda	72 gr.
Phosphoric acid, s.g. 1·500	4 oz.
Cochineal colouring	a sufficiency
Concentrated orange-flower water	4 oz.
Water	q.s.

Dissolve the chalk in the acid and 10 oz. of water, add the soda and potash salts, the orange-flower water, and sufficient cochineal to colour; then filter and wash the filtrate with water until 27 oz. of filtrate are obtained. Product 40 oz.

One volume of this to 3 volumes of thick syrup makes Parrish's Syrup. By making 20 oz. of product a 1-to-7 liquor is obtained, but it does not keep well.

Liquor Phosphori

(Ashburton Thompson

(syn. *Syrupus Phosphori*, *Tr. Phosphori*)

I

Phosphorus	gr. j.
Absolute alcohol	ʒv.
Glycerine	℥iss.
Rectified spirit	ʒij.
Spirit of peppermint	♏xl.

Dissolve the phosphorus in the alcohol by a gentle heat, and to the solution add the glycerine and spirit, previously warmed. When cold add the spirit of peppermint.

'ʒj. = phosphorus gr. $\frac{1}{12}$.'

The above is the original prescription.

II. N.F.

Phosphorus	1 gr.
Absolute alcohol	450 minims
Spirit of peppermint	10 minims
Glycerine	2 fl. oz.

Dissolve the phosphorus in 400 minims of absolute alcohol, in a stoppered vial or test tube, by immersion in a water-bath and frequent agitation. When nearly cold add the rest of the alcohol, the glycerine, and finally the spirit of peppermint.

'ʒj. = phosphorus gr. $\frac{1}{24}$.'

III

Phosphorus	gr. j.
Absolute alcohol	℥j.
Oil of peppermint	♏ij.
Rectified spirit	ʒss.
Glycerine to	℥vj.

Place the phosphorus and glycerine in an 8-oz. flask or good bottle. Heat in a water-bath, shaking occasionally until the phosphorus is dissolved. Then add the absolute alcohol, heated in the same way, and the rectified spirit with the oil dissolved in it.

ʒj. = phosphorus gr. $\frac{1}{48}$.

It takes several hours to make liq. phosphori by the first prescription, and there is great loss of alcohol, while most of the phosphorus is oxidised. The second formula is not much better. The late Mr. John Williams found that hot glycerine dissolves phosphorus easily, but alcohol throws down some of it, and he thought the fullest strength of the resulting solution was about gr. $\frac{1}{24}$ in a drachm. In our experience it varies between gr. $\frac{1}{36}$ and gr. $\frac{1}{50}$, much of the phosphorus in the stronger solution being deposited during cold weather. The third formula we have found to be satisfactory, and the resulting solution contains a little more free phosphorus than Ashburton Thompson's, without, of course, the phosphorus oxides.

Liq. Phosphat. Ferri Magnet.

Liq. ferri persulphat. B.P.	11 oz.
Liq. ammoniæ . . .	16 oz.

Dilute the ammonia with 2 pints of water, gradually add the solution of ferric sulphate previously diluted with 2 pints of water, taking care that the ammonia is in excess. Wash by decantation until free from sulphate, throw on to a calico filter, strain and drain well. Dissolve the moist magma in—

Citric acid . . .	$7\frac{1}{2}$ oz.
Dilute phosphoric acid .	3 oz.

Then gradually add, with constant stirring—

Solution of ammonia. .	$6\frac{1}{2}$ oz.

Liq. Picis Alkalinus, N.F.

Coal tar	℥v.
Caustic potash . .	℥iiss.
Water	℥xiiss.

Dissolve the potash in the water and shake the tar with this solution until dissolved; then strain through a piece of lint.

The German liquor of the same name is a solution of potash 1, water 3, rectified spirit 3, and coal tar 3 (all by weight), filtered after standing twenty-four hours, and made up to 10 (by weight) with proof spirit.

Liquor Plumbi Caustici (Gerhardt)

Caustic potash . .	ʒx.
Litharge . . .	ʒj.
Water	℥iss.

Boil together until the litharge dissolves, then add water to make the solution weigh 30 dr.

Liq. Potassæ (Brandish)

(syn. *Brandish's Alkaline Solution*)

American pearl ashes .	lb. ivss.
Quicklime . . .	lb. iss.
Wood ashes (from ash tree)	lb. iss.
Boiling water .	Cong. iv. ℥viij.

Add the lime, then the pearl ashes, and afterwards the wood ashes to the water. Stir well, allow to stand twenty-four hours, and decant the clear liquor.

NOTE.—Most of the published formulas give the quantities incorrectly, because the writers have not recognised that Mr. Brandish's original recipe was written in old weights and measures. Cooley says that 10 to 12 drops of oil of juniper should be added to each gallon, but that is rarely done nowadays; indeed, the solution is in little demand.

Liq. Rhei Dulcis

Rhubarb (in coarse powder)	℥viij.
Rectified spirit . .	℥x.
Glycerine . . .	℥j.
Sugar	℥vj.
Water . . .	a sufficiency

Mix the spirit with the glycerine and 8 oz. of water and pour 12 oz. of the mixture on the rhubarb. Set aside to macerate for six hours, then pack in a percolator and percolate with the rest of the mixture. When percolation ceases displace the strong tincture from the marc with water until 15 oz. of percolate have been obtained. Set this aside and continue to percolate with water until another 20 oz. of percolate are obtained. Evaporate this to 5 oz., mix with the reserved portion, dissolve 6 oz. of sugar in the mixture, make up to 24 oz. with proof spirit, and after a day filter.

Liquor Rosæ Dulcis

Carmine	ʒij.
Otto of rose . . .	ʒss.
Rectified spirit . .	℥iss.
Solution of ammonia .	℥j.
Glycerine . . .	℥xij.
Water to . . .	℥xxiv.

Mix the carmine with the ammonia solution in a wide-mouthed flask, heat gently until the carmine is dissolved and ammonia vapour is faint, then add the water and glycerine previously mixed. Shake. Mix the otto with the spirit and filter. Add the clear solution to the carmine solution and mix.

NOTE.—With some carmines the liquor becomes cloudy after standing a time. Should that occur the brightness is restored by a small quantity of potash solution, which, indeed, may be used in place of ammonia in the first instance, as in the following formula:—

Carmine	℥j.
Solution of potash . .	℥ij.
Glycerine . . .	℥iv.

Mix and add

Otto of rose . . .	ʒss.
Rectified spirit . .	℥ij.
Syrup to . . .	Oij.

Proceed as with the first formula.

Liq. Santal. Co.

I

Ol. santal. . . .	℥ij.
Ol. cubebæ . . .	℥j.
Copaibæ . . .	ʒvj.
Ol. pimentæ . . .	ʒss.
Ol. cassiæ . . .	ʒss.
Tr. buchu . . .	℥vj.
Inf. buchu conc. . .	℥vj.
Spt. rectificat. . .	℥viij.
Liq. potassæ . . .	℥vj.
Mag. carb. levis . .	℥j.
Aq. destillat. . . .	℥iij.

Boil the potash solution and mix it with the copaiba and oils. Allow to stand for two days, add the water, shake well, and in half an hour add the tincture, infusion, and spirit. Next add the magnesia. Mix well, allow to stand for twenty-four hours, and filter through paper wetted with distilled water.

II

Ol. santal. . . .	℥j.
Liq. copaibæ sol. . .	℥xxij.
Spt. cinnamomi . .	℥ss.
Tr. buchu (1 in 5 S.V.R.)	℥iiss.
Tr. cubebæ (1 in 5 S.V.R.)	℥iij.

Mix in the above order and filter through a filter paper sprinkled with fullers' earth.

NOTE.—Both of these formulas provide miscible liquors. There is more waste with the first than with the second.

Dose: A teaspoonful.

Liquor Sennæ Fruct.

Bruised senna-pods	℥xvj.
Rectified spirit	℥v.
Distilled water	℥xij.

Macerate for a day, stirring the mixture two or three times; then press out the liquor. Dissolve in it ol. carui ♏j., ol. amygd. essent. ♏j., ol. limonis ♏ij., and reserve. Again macerate the marc in the following menstruum :—

Solution of ammonia	♏xx.
Glycerine	℥j.
Distilled water	℥xix.

After six hours press out as much liquor as will make 16 oz. when mixed with the first portion. Filter.

Dose: ʒj.

Liquor Strychninæ Acetatis, N.F.

(*Hall's Solution of Strychnine*)

Acetate of strychnine	gr. xvj.
Diluted acetic acid	℥ss.
Rectified spirit	℥iv.
Compound tincture of cardamoms	ʒj.
Water to	℥xvj.

Dissolve the acetate of strychnine in about 8 oz. of water mixed with the diluted acetic acid, then add the spirit, tincture and enough water to make 16 oz. Allow the mixture to stand a few days and filter.

Liquor Van Swieten

(*Liqueur de Van Swieten, Codex*)

Perchloride of mercury	gr. xv.
Rectified spirit	℥iij.
Distilled water to	℥xxxij.

Dissolve.

Liquor Thymol.

(Volckmann)

Thymol	ʒj.
Rectified spirit	℥iiss.
Glycerine	℥iiss.
Water	Ovj.

Make a solution.

Liquor Tolutanus pro Syrupo

Tolu balsam	℥v.
Rectified spirit	℥v.
Kaolin	℥iv.
Light magnesia	ʒij.
Water to	℥xxxvj.

Dissolve the balsam in the spirit, heating gently to assist solution. Pour the solution upon the mixed powders in a large mortar, triturate; then work in 30 oz. of warm water. Allow to cool, filter, and wash the filter with water to make 36 oz. of product.

One volume of this to 4 volumes of syrup.

Listerine Substitute

(syn. *Spt. Thymol. Comp.*)

Benzoic acid	℥j. 32 gr.
Sodium biborate	℥j. 32 gr.
Boric acid	℥ij. 64 gr.
Distilled water	℥xlviij.

Dissolve with the aid of heat. Then add the following :—

Thymol	℈viij.
Eucalyptol	ʒss.
Oil of wintergreen	ʒss.
Oil of peppermint	♏xv.
Oil of white thyme	♏v.
Rectified spirit	℥xxiv.

Colour with 10 drops of caramel and add distilled water to 1 gallon. Let the mixture stand twenty-four hours and finally pass through a wetted double filter sprinkled with fullers' earth.

Genuine Listerine is reputed to contain tincture of baptisia 15, boric acid 25, benzoic acid 1, thymol 1, eucalyptol 1, oil of wintergreen 2, oil of peppermint ½, in 100 parts of a mixture of rectified spirit 1 part and water 2 parts.

LOTIONES

The following are the average quantities of medicaments per oz. of water used in making simple lotions :—

Acid. boric.	gr. x.
Acid. carbolic.	gr. x. to ℈j.
Acid. hydrocyan. dil.	♏v.
Acid sulphuros.	ʒj.
Acid. tannic.	gr. viij.
Alumen	gr. v.
Argent. nit.	gr. ij.
Belladonnæ ext.	gr. ij.
Borax	gr. x.
Calcis chlorat. liq.	ʒss.
Carbonis deterg. liq.	♏xx.
Cupri sulphas	gr. iij.
Hydrarg. perchlor.	gr. $\frac{1}{4}$
Plumbi acetas	gr. iij.
Plumbi subacet. liq.	♏x.
Potass. permangan.	gr. j.
Potass. sulphurat.	gr. x.
Sodæ chlorat. liq.	ʒss.
Sodii carbonas	gr. x.
Sodii hyposulph.	ʒss.
Zinci chlorid.	gr. ij.
Zinci sulphas	gr. iij.
Zinci sulphocarbol.	gr. v.

Lotio Adstringens, N.F.

(*Warren's Styptic*)

Into a mortar put sulphuric acid ʒv., and slowly mix with it oil of turpentine ʒiv. When cold add S.V.R. ʒiv. and mix.

Lotio Calaminæ

Calaminæ præpar.	ʒiv.
Zinci oxidi	ʒij.
Glycerini	℥ss.
Aq. calcis	℥iv.
Aq. rosæ ad	℥viij.

M.

A lotion for eczema.

Lotio Evaporans

Ammon. chlorid.	℥ss.
Spt. rectificat.	℥ij.
Aq. ad	℥xij.

M.

Lotio Bismuthi Co.

(Startin)

Bismuthi subnitratis	℥ss.
Zinci oxidi	℥ss.
Spt. camphoræ	℥ss.
Glycerini	℥ss.
Aq. ad	Oj.

M.

A soothing application for irritable skin, in acne, &c.

Lotio Plumbi c̄ Opio

Plumbi acetat.	gr. xxiv.
Tr. opii	ʒvj
Aq. ad	℥vj.

M.

May be filtered, but is generally sent out turbid.

Lotio Rubra

Zinci sulphat.	gr. xx.
Tr. lavand. co.	ʒiss.
Aq. ad	℥viij.

M.

(Liston)

Zinci sulphat.	ʒj.
Tr. lavand. co.	ʒviiss.
Spt. rosmarini	ʒxiiss.
Aq. ad	℥xxx.

Cooling Lotion

(Sir A. Cooper)

Potass. nitrat.	℥v.
Ammon. chlorid.	℥v.
Aq.	℥xvj.

Solve.

Mel Rosæ

Red-rose petals	lb. v.
Rectified spirit	Cong. iss.
Water	Cong. j.
Glycerine	℥xxxij.
Honey	lb. xlviij.

Macerate the red-rose leaves in

the rectified spirit for twenty-four hours, then add the water, and, after two hours, press and strain. To the liquor add the glycerine, recover the spirit by distillation, and evaporate the remainder to 5 lbs. Allow to stand for twelve hours, filter, add the honey to the filtrate, and heat until the product weighs 50 lbs.

MISTURÆ OR MIXTURES

While most of the formulas in this section have been arranged according to the alphabetical order of the chief active ingredient, a considerable number of them are placed together according to the complaints for which they are used, and others are placed under the names of the originators. The doses when ascertainable have been added, the equivalents being ʒj. = a teaspoonful, ʒij. = a dessertspoonful, and ℥ss. = a tablespoonful.

Mistura Acetoni

(Dr. W. L. Atlee)

Acetoni	ʒj.
Tr. camph. co. . .	℥j.
Vin. antimonialis . .	℥j.
Vin. picis . . .	℥ij.

M.

Dose : ʒj. for bronchial cough.

Mistura Acidi Oxalici

(Dr. A. W. Marsh)

Acidi oxalici . . .	gr. xvj.
Syr. aurantii . . .	℥j.
Aq. ad	℥iv.

M.

Dose : ʒj. every four hours for amenorrhœa.

Mistura Acida Aperiens

(Startin)

Magnesii sulphatis . .	℥iij.
Acidi sulphurici dil . .	ʒiij.
Ext. glycyrrhizæ liq. .	ʒiij.
Aq. ad	Oj.

M.

Dose : ʒij. to ℥ss. in water. (In such skin-affections as nettlerash.)

Mistura Antiepileptica

(Brown-Séquard's)

Sodii bromidi . .	ʒiij.
Potassii bromidi . .	ʒiij.
Ammonii bromidi . .	ʒiij.
Potassii iodidi . .	ʒiss.
Ammonii iodidi . .	ʒiss.
Ammonii carbonatis .	ʒj.
Tr. calumbæ . .	℥iss.
Aq. ad	℥viij.

M.

Dose : ʒiss. before each meal, and ʒiij. at bedtime.

Mistura Agrimoniæ Co.

Berberis vulgaris . .	℥ss.
Agrimoniæ eupatoriæ .	℥ss.
Antirrhinæ linariæ . .	℥ss.
Rad. taraxaci . . .	℥ss.
Flor. anthemidis . .	℥ss.
Fruct. carui . . .	℥ss.
Apii petroselini . .	℥ss.
Rad. rhei . . .	℥ss.
Aq. bullientis ad . .	℥xvj.

Bruise the drugs and herbs, pour on the water, infuse for two hours, press, and strain. To the strained product add 2 oz. of glycerine, and make up to 16 oz. with water.

Mistura Alba

Magnesii carbonatis	ʒiss.
Magnesii sulphatis	ʒiv.
Aq. menthæ pip. ad	℥vj.

M.

Dose : ℥ss. to ℥j. as an aperient.

Mistura Antidysenterica

(syn. *Mistura Camphoræ Acida, N.F. ; Hope's Camphor-mixture*)

Acidi nitrici	ʒij.
Tr. opii	♏lxxx.
Aq. camphoræ ad	℥xvj.

M.

Dose : ℥ss. every hour or two, according to symptoms.

Mistura Antiasthmatica

I. (Fothergill's)

Ammonii iodidi	ʒij.
Ammonii bromidi	ʒiij.
Syrup. tolutani	℥iij.
Tr. lobeliæ	℥v.

M.

Dose : ʒj. every three hours, or oftener.

II. (Shoemaker's)

Apomorphin. hydrochlorat.	gr. ij.
Acid. hydrochlor. dil.	ʒiss.
Morphin. hydrochlorat.	gr. j.
Syr. tolutan.	℥j.
Aq. chloroformi ad	℥viij.

M.

Dose : ℥ss. every third hour until relieved.

Barbour's Mixture

A Glasgow popular remedy, sometimes called Barber's, Barbara's or Barbra's mixture It consists of the dry ingredients of tr. camph. co. in the following proportions :—

Pulv. opii	℈j.
Acid. benzoici	℈j.
Camphoræ	℈j.

M.

This quantity sells for *8d.* in a box labelled with the following directions :—

'To be added to two gills of whisky. Macerate for two days, shaking occasionally, and strain. Dose : One teaspoonful thrice daily when the cough is troublesome.'

Mistura Antispasmodica

(Sydenham's)

Spt. ætheris comp.	ʒj.
Tr. valerianæ	ʒv.
Tr. castorei	ʒx.
Aq. fœniculi	℥xiiss.

M.

Dose : ℥ss. every three or four hours.

Mistura Antisudorifica

(Sir B. W. Richardson

Sol. hydrogen. peroxid.	℥iiss.
Acid. sulphuric. dil.	ʒss.
Glycerini	℥ss.
Aq. destillatæ a	℥vj.

M.

Dose, ℥j., well diluted, at bedtime, for the night sweating of phthisis.

Mistura Begbii

Acidi hydrocyanici diluti	ʒss.
Acidi nitrici diluti	ʒiij.
Glycerini	℥j.
Infusi quassiæ ad	℥vj.

M.

Dose : ℥ss. in a wineglassful of water three times a day.

NOTE.—This was a favourite prescription of the late Dr. Warburton Begbie, of Edinburgh, who supposed that the nitric acid reacts with the glycerine to form a nitro-compound—a not improbable conjecture. The mixture has wonderful efficacy as a tonic for consumptive persons, and it relieves the cough.

Blood-purifying Mixture

Potass. iodid. . .	ʒj.
Potass. bicarb. . .	ʒiss.
Liq. arsenicalis . .	ʒiss.
Spt. chloroformi . .	ʒss.
Ext. sarsæ co. conc. .	℥ij.
Aq. ad . . .	℥viij.

M.

Dose: A dessertspoonful in a little water thrice daily, immediately after food.

See also Mist. Sarsæ Co.

Bronchitis-mixtures

I

Chloral. hydrat. . .	ʒj.
Ammon. carb. . .	ʒj.
Tr. digitalis . . .	ʒj.
Syrupi	ʒiij.
Aq. ad	℥vj.

M.

Dose: A tablespoonful every four hours.

II

(Dobell's)

Ammoniæ carb. .	gr. xxxv.
Vin. ipecac. . . .	ʒij.
Æther. chloric. . .	ʒj.
Tr. camph. co. . .	ʒij.
Aq. ad	℥xvj.

M.

Dose: ℥ss. three times a day, or often enough to control the cough.

See also Misturæ pro Tussi, page 558.

Mistura Calcii Chlor.

(Dr. Noble Smith)

Liq. calcii chlor. . .	℥ij.
Aquæ ad . . .	Oij.

M.

Mistura Calc. Chloridi c̄ Ferro

(Dr. Noble Smith)

Mist. calcii chlor. . .	℥vij.
Mist. ferri ad . .	℥xxiij.

M.

Make mistura ferri as follows:—

Tr. ferri mur., P.L. .	ʒj.
Aq. camphoræ . .	℥vj.

Mix and add

Spt. ammon. arom. .	ʒj.
Aq. camphoræ . .	℥vj.

Previously mixed.

Make liq. calcii chlor. by mixing ℥vj. each of hydrochloric acid and water, and saturate the mixture by the addition of prepared chalk ℥v. Allow to settle, and decant. It should be neutral.

Mistura Bromoformi

(P. W. Bedford)

Bromoform. . . .	♏xvj.
Spt. rectificat. . .	ʒij.
Tr. cardam. co. . .	ʒij.
Glycerini . . .	℥iss.

M.

Dose: ʒj. every four hours for whooping-cough—this for children of one to three years. The dose to be gradually increased.

Mistura Camphoræ Aromatica, N.F.

(Parrish's)

Compound tincture of lavender . . .	℥iv.
Sugar	ʒiv.
Camphor water . .	℥xvj.

Mix the compound tincture of lavender with about 8 oz. of camphor water, dissolve the sugar in the mixture, and add enough water to make 16 oz.

Mistura Carminativa

(*Mothers' Friend or Infants' Preservative*)

I

Ol. anethi	♏viij.
Spt. ammon. arom.	ʒj.
Magnesii carbonat.	ʒj.
Aq. ad	℥iv.

Add the oil of anise to the spirit, shake, and triturate with the magnesium carbonate. Add the water, mix, and filter. To the filtrate add

Sodii bromidi	℈j.
Potassii bicarbonat.	ʒss.
Tr. cardam. co.	℥ss.
Syr. rhœados ad	℥vj.

M.

Dose: ʒj. in a tablespoonful of water, to be given to the child in sips.

II

Potassii chloratis	gr. v.
Potassii bicarbonat.	ʒss.
Spt. chloroformi	ʒj.
Syrupi	℥iss.
Sacch. ust.	q.s.
Aq. anethi ad	℥vj.

M.

Dose: ʒj., given as No. 1.

III

Sacchari albi	℥xvj.
Aq.	℥xv.

Dissolve and add

Magnes. carb. levis	℥j.
Pulv. rhei	ʒss.
Pulv. zingiberis	ʒiss.
Pulv. ipecacuanhæ	ʒj.
Ol. anisi	♏xv.
Ol. anethi	♏v.
Tr. opii	℥ss.
Aq. ad	℥xxx.

M.

The powders should be triturated with the oils, and a few ounces of the syrup added to make a smooth mixture before it is made up finally to 30 oz.

Dose: ♏v. to ʒj. or more, according to age.

ʒj. = tr. opii ♏j.

IV

Magnes. carbonat..	℈iv.
Spt. ammon. aromat.	ʒiss.
Glycerini	℥ss.
Tr. cardam. comp..	ʒiij.
Liq. calcis saccharat.	ʒij.
Aq. ad	℥vj.

M.

Dose: ʒj. when the child is troubled with flatulence.

Mist. Chlorin. et Quininæ

(Dr. Burney Yeo)

Potass. chloratis	gr. xxx.
Acid. hydroch. (pur.)	♏xl.
Quinin. sulph.	gr. xxiv.
Syr. aurantii	℥j.
Aq. ad	℥xij.

Take a 12-oz. bottle with a tight-fitting cork, then place in the bottle the chlorate and hydrochloric acid; tightly cork, and let it stand for about half an hour. Then gradually add a little water (slightly warm is better than cold, as it quickly absorbs the chlorine), cork the bottle again until the water is well saturated with the chlorine, then gradually add more water, together with the quinine and syrup, until the bottle is filled, taking care during the process that as little as possible of the chlorine escapes.

Dose: ℥ss. to ℥j. every two, three, or four hours.

Mistura Chloroformi, U.S.P.

Chloroform	8 parts
Camphor	2 parts
Fresh yolk of egg	10 parts
Water	80 parts

Rub the yolk of egg in a mortar, add the camphor dissolved in the chloroform, mix well, and add the water gradually until by stirring a uniform mixture is obtained.

Dose: ʒj. to ℥ss.

Cholera-mixtures

I

Acid. tannic. . . .	ʒj.
Æther. chlor. (D. & F.) .	ʒij.
Ac. sulphuric. dil. . .	ʒiss.
Tr. zingib. . . .	ʒiij.
Aq. menth. pip. ad .	℥viij.

M.

A sixth part for a dose.

II

(Sir B. W. Richardson's)

Creosoti	♏xij.
Tr. camph. co. . .	ʒvj.
Spt. æther. chlor. . .	ʒiv.
Syr. rhœados . . .	ʒij.

M.

Dose: ʒj. every hour in half a tumbler of water.

See also Diarrhœa Mixtures. The above are specially serviceable when there is much pain.

III

(Sir Andrew Clark's)

For Choleraic Diarrhœa

Acid. sulphuric. arom. .	℥ss.
Spt. ætheris . . .	℥ss.
Tr. chloroformi co. .	℥j.
Tr. camphor. co. . .	℥iss.
Spt. menthæ pip. . .	ʒiij.
Ext. hæmatoxyli . .	ʒiv.
Aq. camphoræ ad . .	℥xij.

M.S.A.

Dose: ℥j. for the first dose, and ℥ss. every two, three, or four hours afterwards, according to the urgency of the diarrhœa.

This medicine must be preceded by a full dose of castor oil, and given only if the diarrhœa continues after the action of the oil has ceased.

Christison's Cough-mixture

Syrupi scillæ . . .	℥ij.
Aq. menthæ pip. . .	℥ij.
Tr. opii ammoniat. . .	℥ss.
Tr. lavandulæ co. . .	℥ss.
Syrupi	℥j.

M.

Dose: ℥ss. three or four times a day.

NOTE.—This is the formula given in Christison's 'Dispensatory,' 1842, page 839. It is considerably played upon by Scotch chemists, liberties being taken with the ingredients and quantities.

Mist. Codeinæ Co.

Sulphate of codeine .	gr. iij.
Solution of sulphate of atropine . . .	♏xij.
Solution of hydrochlorate of strychnine . .	ʒj.
Syrup of tolu . . .	℥iss.
Acid infusion of roses to .	℥vj.

Dissolve and mix.

A tablespoonful in a wineglassful of water every four or six hours.

This is a sedative cough-mixture used in the Edinburgh Infirmary for phthisical cases.

Mistura Copaibæ Composita, N.F.

I

(Lafayette's)

Copaiba	℥ij.
Spirit of nitrous ether .	℥ij.
Compound tincture of lavender . . .	℥ij.
Solution of potash . .	℥ss.
Syrup	℥v.
Mucilage of dextrin (N.F.) to . . .	℥xvj.

Mix the copaiba with the solution of potash and the spirit of nitrous ether. Then add the compound tincture of lavender, and, lastly, the syrup and mucilage of dextrin. Mix the whole thoroughly by shaking.

Dose: ℥ss. three times a day.

II

(Chapman's)

N.F. Modification

Copaiba	℥iv.
Spirit of nitrous ether	℥iv.
Compound tincture of lavender	℥ss.
Tincture of opium	℥ss.
Mucilage of acacia	℥iss.
Water to	℥xvj.

Mix as above.

Dose: ʒss. three times a day.

Mistura Coto

(Dr. Burney Yeo)

Ext. coto liq.	ʒj.
Tr. cardam. co.	ʒj.

Misce et adde

Mucil. acaciæ	ʒiij.
Syrupi	ʒij.
Aq. ad	℥vj.

Dose: A tablespoonful every four hours in cases of dysentery and choleraic diarrhœa.

Diarrhœa Mixtures

I

(Board of Health's Prescription)

Pulv. conf. aromatic.	ʒiij.
Spt. ammon. arom.	ʒiij.
Tr. catechu	ʒx.
Tr. cardam. co.	ʒvj.
Tr. opii	ʒj.
Mist. cretæ ad	℥xx.

M.

IA

(B. of H. 1848 Prescription)

Mist. cretæ co.	℥j.
Confect. aromatic.	gr. x.–gr. xv.
Tr. opii	gtt. v.–gtt. x.
Tr. catechu	ʒss.–℥j.

M. pro dose.

The following label is permitted by the Board of Inland Revenue to be used with the mixture, to be sold free of medicine-stamp duty, provided it is not otherwise recommended: —

DIARRHŒA AND CHOLERA MIXTURE.

THE following observations from the Board of Health deserve the most serious attention from every person :—

'Looseness of the bowels, however slight, ought on no account to be neglected. It is by far the most usual forerunner of the disease (cholera), as well as the most important, because in its various degrees it constitutes the stage in which life may most easily be saved.'

Through not attending to this caution many lives have been absolutely thrown away, and, on the other hand, by a prompt and early use of such a remedy thousands have been saved both in Europe and India.

SHAKE THE BOTTLE.

Dose: Two tablespoonfuls for an adult, one tablespoonful for a child twelve years old, and a dessertspoonful for a child seven years old. To be taken after each liquid motion.

(Name and Address.)

II

(Dr. Bickersteth's)

Tr. opii	ʒiss.
Tr. cinnamomi	ʒiij.
Tr. kino	ʒiv.
Mist. cretæ ad	℥viij.

M.

(Label for No. II)

COMPOUND CHALK
MIXTURE.

For Adults Only.

Dose: A tablespoonful every hour for three doses, then every four hours while the diarrhœa lasts.

SHAKE THE BOTTLE.

(Name and Address.)

III

(Loomis's, N.F.)

Tincture of opium	℥ss.
Tincture of rhubarb	℥ss.
Compound tincture of catechu (U.S.P.)	℥j.
Oil of sassafras	♏xx.
Compound tincture of lavender to make	℥iv.

Mix.

Dose: ʒj. in water every two hours for four doses, then every four hours.

IV

(For Children)

Bismuth. subnitrat.	ʒss.
Tr. camph. co.	ʒj.
Liq. hydrarg. perchlor.	♏xv.
Syrupi	℥ss.
Aq. ad	℥ij.

Triturate the bismuth for three minutes before adding the water and other ingredients.

Doses: For children of one to two years, half a teaspoonful; two to five, a small teaspoonful; above five, a whole teaspoonful every three hours.

V

(Squibb's)

Tincture of opium	℥j.
Tincture of capsicum	℥j.
Spirit of camphor	℥j.
Chloroform	ʒiij.
Rectified spirit to	℥v.

Mix.

Dose: ʒss. to ʒj. every four hours. To be taken in water.

Numerous other formulas for preparations to which specific names have been given will be found throughout this chapter. So far as adults are concerned, diarrhœa 'comes round regularly with the new potatoes and fresh herrings,' and is nature's attempt to get rid of matter irritating the intestines. It is well to aid nature slightly by a dose of castor oil, as Sir Andrew Clark recommended, following it by a few doses of a diarrhœa-mixture. No. I. we consider the safest and best for stock purposes. The diarrhœa of children is a much more serious, because not so simple, matter, and we include one formula only which provides a perfectly safe corrective, sedative, and antifermentative mixture. It has been shown that the diarrhœa of children is largely due to ptomaine poisoning which arises from their feeding-bottles being imperfectly cleaned or their milk food in some other manner decomposing. In such cases small doses of mercurial salts are of great value, such as iodic-hydrarg. $\frac{1}{240}$ gr. or liq. hydrarg. perchlor. ♏j. in slightly sweetened water. As good as either is hydrarg. c̄ cretâ gr. $\frac{1}{12}$ with pulv. sacch. lact. gr. ss.

Mistura Expectorans (Stokes)

(syn. *Mistura Stokesii*)

I. The Original

Liq. morphiæ acet.	ʒj.
Aq. laurocerasi	ʒiss.
Syr. flor. aurant.	ʒiv.
Mucilag. acaciæ	ʒiij.
Aquæ ad	℥vj.

Ft. mist. et signa,

A tablespoonful three or four times a day or when cough troublesome.

Dr. Stokes sometimes added codeia (3 gr.) or acid. hydrocyan. dil. (♏vj.) to the above mixture; but the formula as written is the accepted one in this country for mist. Stokesii. The following is the formula of the 'National Formulary':—

II

Ammon. carb.	gr. 128
Aquæ	℥iss.
Ext. senegæ fl.	℥ss.
Ext. scillæ fl.	℥ss.
Tr. opii camph.	℥iij.
Syr. tolu. ad	℥xvj.

Dissolve the carbonate in the water, add the fluid extracts and tincture, and make up to 16 oz. with tolu syrup.

Eczema-mixture for Children

(Sir Erasmus Wilson)

Liq. arsenicalis	ʒj.
Vin. ferri	ʒiss.
Syrupi	ʒiij.
Aq. anethi	℥ij.

M.

Dose: ʒj. with meals thrice daily. [This is the dose for a child of ten years or upwards.]

Mist. [*vel* Liquor] Ferri et Ammon. Acetatis, U.S.P.

(Basham's Mixture)

Tincture of chloride of iron	ʒij.
Diluted acetic acid	ʒiij.
Solution of acetate of ammonia	℥iiss.
Aromatic elixir	ʒx.
Glycerin	℥iss.
Water to	℥xiiss.

Mix the solution of acetate of ammonia with the acid, add the tincture, then the rest of the ingredients in their order, and mix.

Dose: ʒj. to ℥ss.

Mistura Ferro-salina

(Sir Andrew Clark)

Magnesii sulphatis	℥j.
Potassii bitartratis	ʒj.
Ferri sulphat. exsiccat.	gr. x.
Aquæ	Oij.

M.

Dose: A wineglassful half an hour before breakfast each morning.

Mistura Gentianæ, B.P. 1867

Gentian-root, sliced	¼ oz.
Bitter-orange peel, cut small	30 gr.
Coriander-fruit, bruised	30 gr.
Proof spirit	2 oz.
Distilled water	8 oz.

Macerate the solids in the spirit for two hours, add the water, and macerate for another two hours; then strain through calico.

Dose: ℥ss. to ℥j.

NOTE.—This is an elegant preparation, finer in flavour than the infusion, an active tonic, and keeps well.

Mist. Glycyrrhizæ Co., U.S.P.

(syn. *Brown Mixture*)

Mucil. acaciæ	ʒx.
Ext. glycyrrhizæ pulv.	ʒiij.
Syrupi	ʒv.
Spt. æther. nitrosi	ʒiij.
Vin. antimonialis	ʒvj.
Tr. opii camph.	℥iss.
Aquæ dest. ad	℥xiiss.

Dissolve the extract of liquorice in 6 oz. of water, add to a mixture of the rest of the ingredients contained in a measure, and wash out the mortar with the remainder of the water, to make the whole measure 12½ oz.

Dose: ℥ss. in bronchitis.

Gout-mixture

(Similar to Laville's)

Quinii	ʒiv.
Ext. colocynth. alcoholic.	ʒij.
Spt. rectificat.	℥iv.
Vin. malagæ	℥xv.

Misce et filtra.

Dose: ʒss. to ℥ss. in half a wineglassful of sweetened water.

NOTE.—The above is the French formula. Quinium (Labarraque) should be used in compounding the mixture. It is the mixture known in England as quinetum, consisting of the total alkaloids of red-cinchona bark in the form of sulphates. In its absence 3 parts of quinine sulphate and 1 part of cinchonine sulphate may be used.

Headache-mixtures

I

Ferri et quin. cit.	ʒj.
Potas. bromid.	ʒij.
Tr. aurant.	ʒj.
Syrup.	ʒv.
Aq. ad	℥vj.

M. et S.

Dose: ℥ss. two or three times a day.

II

Potassii bromidi	℥ij.
Tr. aconiti	ʒj.
Syrupi	℥ij.
Aq. ad	℥vj.

M. et S.

Dose: ʒij. in water every three hours.

Mistura Gummosa

Acacia mucilage	℥iiss.
Syrup	℥iss.
Distilled water	℥vj.

Mix.

Hiccough-mixture

(Dr. J. W. Allen)

Ol. succini	ʒss.
Liq. potassæ	ʒj.
Tr. camph. co.	℥ss.
Mucil. acaciæ	ʒij.
Aq. menth. pip. ad	℥vj.

Fiat emulsio.

Dose: ℥j. every two hours.

Liver-mixtures

I

(Sir Andrew Clark)

Acid. nitro-hydrochlor. dil.	ʒij.
Tr. nucis vomicæ	ʒij.
Ext. cinchonæ liq.	ʒiij.
Aq. chloroformi ad	℥vj.

M.

Dose: ʒij. in a wineglassful of water at 11 A.M. and 6 P.M.

II

(Dr. Lauder Brunton)

Acid. nitro-hydrochlor. dil.	ʒij.
Spt. chloroformi	ʒij.
Ext. cinchonæ liq.	ʒj.
Tr. aurantii	℥ss.
Aq. ad	℥vj.

M.

Dose: ℥ss. in a wineglassful of water thrice daily before food.

III

Acid. nitro-hydrochlor. dil.	ʒij.
Succi taraxaci	ʒiv.
Tr. buchu	ʒiij.
Tr. podophylli	ʒj.
Spt. juniperi	ʒij.
Liq. strychninæ	♏xlviij.
Syrupi	ʒvj.
Aq. ad	℥vj.

M.

Dose: ℥ss. in water thrice daily.

This mixture is also claimed to be Sir Andrew Clark's. We have ascertained that No. I. is one of the famed physician's prescriptions, but that No. III. did not originate with him. Nevertheless, it is a good preparation.

Iron Tonic Bitters

Ferri et quin. cit.	ʒij.
Acid. citric.	ʒiss.
Glycerini	℥ij.
Tr. aurantii	℥j.
Tr. nucis vom.	ʒij.
Vin. xerici	℥iv.
Aquæ ad	Oj.

M.

Dose: ʒij. three times a day in half a wineglassful of water.

Put up in 6-oz. bottles, neatly capped and labelled, to retail at 1*s.* 3*d.*

Mist. Lobeliæ Co.

Iodide of potassium	ʒij.
Carbonate of ammonium	ʒj.
Ethereal tincture of lobelia	℥ss.
Spirit of chloroform	℥ss.
Ipecacuanha wine	ʒj.
Infusion of senega to	℥vj.

Dissolve and mix.

Dose: ℥ss. in a wineglassful of water every four hours, for bronchitic asthma.

Mist. Magnesiæ et Asafœtidæ U.S.P.

(*Dewee's Carminative*)

Magnes. carb.	ʒvj.
Tr. asafœtidæ	ʒx.
Tr. opii	♏lxxv.
Sacchari albi	℥iss.
Aq. ad	℥xv.

Rub the carbonate and the sugar in a mortar with the tinctures, then gradually add the water.

Dose: ʒj.

Mixture for Nausea and Sickness

(Sir Douglas Powell)

Sodii bicarbonatis	ʒs
Acid. hydrocyanic. dil.	♏xij.
Tr. strophanthi	♏xij.
Aq. ad	℥iss.

M.

Dose: ʒj. with a tablespoonful of soda-water every four hours.

McDade's Mixture or Specific

(syn. *Succus Alterans*)

Ext. smilac. liq.	℥xvj.
Ext. stillingiæ liq.	℥xvj.
Ext. cappæ min. liq.	℥xvj.
Ext. phytolaccæ liq.	℥xvj.
Tr. xanthoxyli	℥viij.

M.

Dose: ʒj. in water thrice daily before meals, increased gradually to ℥ss.

Neuralgic Mixtures

I

Tr. gelsem.	ʒij.
Tr. cardam. co.	℥ss.
Quininæ sulph.	gr. xxiv.
Acid. hydrobrom. dil.	ʒiij.
Aq. ad	℥iij.

M.

Dose: ʒj. in half a wineglassful of water every three or four hours till relieved; but more than four doses should not be taken by an adult in a day.

II

Ammon. chloridi	ʒij.
Tr. aconiti	ʒss.
Syrupi	℥ss.
Aq. ad	℥vj.

M. et S.

Dose : A sixth part thrice daily.

III

Quininæ sulphat.	gr. xv.
Antipyrin.	ʒj.
Tr. cimicifugæ	ʒij.
Acid. hydrobrom. dil.	ʒij.
Tr. aurantii	ʒiss.
Aq. ad	℥vj.

M. et filtra.

Dose : ℥ss., to be repeated thrice at intervals of four hours.

IV

Croton-chloral. hydrat.	ʒj.
Ammon. bromid.	ʒij.
Tr. gelsemii	ʒij.
Spt. chloroformi	ʒij.
Glycerini	℥ss.
Aq. ad	℥vj.

Rub the croton-chloral hydrate with the glycerine, and shake with 2 oz. of water and the tinctures, add the bromide dissolved in 2 oz. of water, shake and make up.

Dose : ℥ss. every four hours.

Note. Remedies for neuralgia are so numerous that we can give only a few typical formulas for mixtures. The whole of the above have been tried and not found wanting.

Mistura Ol. Ricini

(Dr. Lauder Brunton)

Ol. ricini	ʒss.
Pulv. acaciæ	q.s.
Tr. opii	♏x.–♏xxx.
Aq. menth. pip.	℥iss.

M.

Dose : ʒj. to ʒij. three or four times a day for chronic dysentery.

Mistura Olei Picis, N.F.

Purified extract of liquorice	℥j.
Oil of tar	℥ss.
Sugar	℥iv.
Chloroform	♏lxxv.
Oil of peppermint	♏xx.
Rectified spirit	℥iiss.
Water to	℥xvj.

Add the extract and sugar to 10 oz. of water, contained in a covered vessel, and heat the mixture to boiling until the extract and sugar are dissolved. Then add the oil of tar, cover the vessel, and allow the contents to cool, stirring occasionally. Next add the chloroform and oil of peppermint, previously dissolved in the spirit, and, lastly, enough water to make 16 oz.

Mistura Oleosa Balsamica, Ph.G.

(syn. *Balsamum Vitæ Hoffmanni*)

Oil of lavender	ʒj.
Oil of cloves	ʒj.
Oil of cassia	ʒj.
Oil of thyme	ʒj.
Oil of lemon	ʒj.
Oil of mace	ʒj.
Peruvian balsam	℥ss.
Rectified spirit to	℥xxx.

Mix, shake occasionally every day for about a week, and filter through paper damped with spirit and sprinkled with fullers' earth.

Mistura Phosphori

(Baily)

Tr. phosphori	♏xxxij.
Glycerini	ʒiv.
Spt. chloroformi	ʒij.
Pulv. tragacanth.	gr. vj.
Aq. destillat. ad	℥viij.

Put the tragacanth in a dry bottle and pour the spirit and tincture upon it ; mix, add the glycerine and 5 oz. of water, and shake until an emulsion is formed. Then make up to the required volume.

Dose: ℥j., which equals phosphorus gr. $\frac{1}{50}$.

To each ounce may be added (1) Tr. nucis vom. ♏x. (2) Tr. nucis vom. ♏vj., quin. hydrochlor. gr. j. . (3) Ferri et quin. cit. gr. iij., tr. nucis vom. ♏vj.

Tr. Phosphori is a solution of 1 gr. of phosphorus in 500 minims of a mixture of equal parts of absolute alcohol and oil of lemon, which is an excellent solvent for phosphorus.

Dose: Two to six minims.

Mist. Quassiæ c̄ Ferro et Mag. Sulph.

Liq. ferri perchlor. .	ʒiij.
Magnes. sulphat. . .	ʒvj.
Inf. quassiæ ad . .	℥xij.

M.

Dose: ℥ss. thrice daily.

I

Mist. Quininæ et Ferri

Citrate of iron and quinine . . .	℈viij.
Rectified spirit . .	℥ss.
Orange-flower water (recent)	℥iij.
Chloroform-water to .	℥viij.

Mix the waters, and dissolve the citrate in the mixture; then add the spirit, and filter twice through English grey filtering-paper.

Dose: For an adult a small dessertspoonful in a wineglass of water three times a day, half an hour before meals. For children of from four to nine years half a teaspoonful, and above that age a whole teaspoonful, in half a wineglass of water, twice or three times a day, half an hour before meals.

NOTE.—It is a matter of importance not to filter this mixture through French grey paper. Its appearance is thereby considerably affected. This retails in 8-oz. bottles at 2*s.* 6*d.*, a price which should be adhered to, as the mixture is very elegant.

II

Quininæ sulphat. . .	ʒiss.
Acid. nitric. dil. . .	ʒij.
Tr. ferri perchloridi .	℥ij.
Glycerini . . .	℥j.
Aq. chloroformi ad . .	℥xx.

M.

Dose: ʒij. in a wineglassful of water thrice daily.

Keeps well, the nitric acid preventing deposit of iron. Retails at 1*s.* 6*d.* to 2*s.* for 8-oz. bottle.

III

Sulphate of quinine .	ʒiij.
Strong solution of perchloride of iron . .	℥j.
Spirit of chloroform .	℥ij.
Tincture of calumba .	℥ij.
Syrup	℥iv.
Glycerine . . .	℥iv.
Orange-flower water .	℥xxiv.
Distilled water to . .	℥lxiv.

Mix the iron solution with 10 oz. of the orange-flower water, and in this dissolve the quinine. Then add the other ingredients, making up to 64 oz., as specified in the formula. Set aside for twenty-four hours, and filter three times through grey filtering-paper. Thus treated, the mixture keeps permanently bright.

Dose: ʒij. to ℥ss. in half a wineglassful of water three times a day.

This is put up in 8-oz. bottles to retail at 1*s.* 6*d.*

IV

Quininæ et ferri cit. .	℈v.
Tr. limonis . . .	℥ss.
Tr. aurantii . . .	℥ss.
Acid. salicylic. . .	gr. iv.
Aq. ad	℥vj.

M. et filtra.

Dose: Same as No. II. This mixture also keeps well, and is more agreeable than No. II.

V

(Free from bitterness)

Quinin. sulph. . .	gr. x.
Acid. sulph. dil. . .	♏x.
Saccharin. solub. . .	gr. ij.
Aquæ menth. pip. ad .	℥iv.

M.

NOTE.—Fluid extract of Yerba Santa is the best covering for the taste of quinine.

Mist. Rhei Rubra

(Dr. Brooks Muriel)

Sodii bicarbonat. . .	ʒj.
Pulv. rhei . . .	ʒj.
Magnes. carbonat. . .	ʒij.
Potass. carbonat. . .	℈j.
Spt. ammon. arom. .	ʒij.
Spt. chloroformi . .	ʒiv.
Ol. anisi . . .	♏xx.
Ol. carui . . .	♏xv.
Syr. simplicis . . .	ʒiv.
Aq. destill. ad . .	℥viij.

Mix the powders in a mortar, add 2 oz. of water gradually, then the syrup and the oils dissolved in the mixed spirits. Pour into a bottle, and wash out the mortar with the rest of the water to make up to 8 oz.

Dose: ℥ss. to ℥j. or more when required as a stomachic.

Mistura Rhei et Sodæ

Sodæ bicarb. . . .	ʒiij.
Pulv. rhei . . .	ʒij.
Ess. menth. pip. (1 in 10)	♏xv.
Syrupi	℥ij.
Aq. ad	℥iv.

Mix the powders with 1 oz. of water and the essence, add the syrup, and make up to 4 oz.

Dose: ʒss. to ʒj.

NOTE.—The 'National Formulary' has a similar mixture, made with ext. rhei fl. The above is the formula generally followed in this country.

Mistura Rhei Composita, N.F.

(syn. *Squibb's Rhubarb-mixture*)

Fluid extract of rhubarb	86 minims
Fluid extract of ipecac.	16 minims
Bicarbonate of sodium	172 gr.
Glycerine . . .	4 oz.
Peppermint-water to .	16 oz.

Dissolve the bicarbonate of sodium in about 8 oz. of peppermint-water, then add the fluid extracts and glycerine, and, lastly, enough peppermint-water to make 16 oz.

Mistura Santali Comp.

(*Nisbet's Specific*)

I

Olei santali . . .	ʒxiiss.
Olei cassiæ . . .	ʒiss.
Olei pimentæ . . .	♏xl.
Spiritus rectificati . .	℥iiiss.

M.

Dose: ʒss. to ʒj. in water or milk thrice daily.

II

Ol. santal. flav. . .	℥iv.
Ol. pimentæ . . .	ʒiv.
Ol. cassiæ . . .	ʒij.
Morph. mur. . . .	gr. ix.
Spt. rectificat. ad . .	℥xij.

M.

Dose: As above.

NOTE.—Both of these formulas were obtained from the originator of the preparation, the late Mr. William J. Nisbet, a Scotch chemist who claimed to be the introducer of sandalwood oil as a remedy for gleet and gonorrhœa. The first formula is the one generally followed, but there are many others, and it is probable that the correct formula was never revealed by Nisbet, except to Messrs. J. F. Macfarlan & Co., of Edinburgh, to whom he sold it, and who still manufacture the preparation. Formulas have been published containing oils of cubebs and copaiba. Nisbet once informed the writer that he considered these injurious, and consequently was careful to exclude them.

Mixtures for Rheumatism

I

Sulphate of quinine .	ʒss.
Iodide of potassium .	ʒij.
Colchicum wine . .	℥j.
Tincture of orange . .	℥ss.
Chloroform-water to .	℥viij.

Rub the quinine with the wine, adding a few drops of dilute sulphuric acid to assist solution; then add the tincture, water, and finally the iodide of potassium.

Dose: ʒij. twice a day, in a wineglassful of water.

II

Sodii salicylat. . .	ʒiss.
Potassæ citrat. . .	ʒj.
Vin. colchici . . .	ʒiss.
Tr. gentianæ co. . .	℥ss.
Aq. chloroformi ad .	℥vj.

M.

Dose: ℥ss. thrice daily.

Note.—These are equally suitable for gout. The first mixture is for chronic cases, the second for those that are more acute. A dose of aperient mineral water, or pil. col. c̄ hydrarg. gr. v. should be taken twice weekly to prevent colchicum accumulation.

Misturæ Sarsæ Compositæ

(syn. *Blood-purifying Mixtures, Iodised Blood-Mixtures, Blood-tonic, &c.*)

I

Iodide of potassium .	gr. xxxvj.
Chlorate of potassium .	gr. xxx.
Fowler's solution . .	♏xxiv.
Spirit of chloroform .	ʒiij.
Compound decoction of sarsaparilla to . .	℥vj.

Mix.

Dose: ℥ss. three times a day.

II

Potassii iodidi . .	℈j.
Liq. taraxaci . . .	ʒiiss.
Ol. sassafras . . .	♏v.
Mist. gentianæ co. . .	℥iss.
Liq. potassæ . . .	ʒss.
Dec. sarsæ co. ad . .	℥viij.

Shake the oil with the mist. gent. co., add the liquor potassæ; dissolve the iodide in a few ounces of the decoction, mix with the previous solution, then add the rest of the ingredients to make an 8-oz. mixture. Filter through a wetted filter-paper.

Dose: ℥ss. in water thrice daily.

III

Potassii iodidi . .	ʒj.
Liq. potassæ . . .	ʒiss.
Dec. sarsæ co. conc. .	℥iss.
Aq. chloroformi ad . .	℥viij.

M.

Dose: ℥ss. in water three times a day.

Note.—'Blood-mixture' is claimed as a trade-mark by the makers of Clarke's blood-mixture.

Mistura Sodii Benzoatis

(Dr. Golding Bird)

Sodii carbonatis . .	ʒiss.
Acidi benzoici . .	℈ij.
Sodii phosphatis . .	ʒiij.
Aq. ferventis . . .	℥iv.
Solve et adde	
Aq. cinnamom. . .	℥viiss.
Tr. hyoscyami . .	℥ss.

M.

Dose: ℥j. thrice daily for gravel.

Mistura Sodæ et Menthæ, N.F.

(*Soda Mint*)

Bicarbonate of sodium .	ʒv. ℈j.
Aromatic spirit of ammonia	ʒj.
Spearmint-water to . .	℥xvj.

Dissolve the bicarbonate of

sodium in about 12 oz. of water, add the spirit, and make up to 16 oz. with spearmint-water.

Mist. Sodii c̄ Magnesia

Dr. Brooks Muriel)

Mag. carb. pond.	ʒxx.
Sod. bicarb.	ʒxx.
Spt. chlorof.	ʒx.
Spt. ammon. co.	℥iiss.
Aq. carui	Oj.
Aq. destil. ad	Oiv.

M.

Dose: ℥ss. to ℥j. For a pick-me-up add acid. hydrocy. dil. ♏iij. to ℥j. of the mixture and take as a draught.

Spermatorrhœa-mixtures

(Dr. Hargreave)

I

Potassii bromidi	℥ss.
Tr. gelsemii	ʒij.
Ext. ergotæ liq.	ʒij.
Tr. belladonnæ	ʒiss.
Syr. zingib.	℥ss.
Aq. ad	℥viij.

M.

Dose: ℥j. twice daily and at bed-time.

II

Potassii bromidi	℥ss.
Tr. hamamelidis	ʒij.
Tr. cocæ	℥ss.
Tr. belladonnæ	ʒj.
Syr. zingiberis	℥ss.
Aq. camphoræ a	℥viij.

M.

Dose: As above.

Note.—The second mixture is to be given after the first begins to lose its effect.

Stomachic Mixtures

(*For Indigestion*)

I. (Dr. T. H. Tanner)

Ac. nit. mur. dil.	ʒij.
Ac. hydrocyan. dil.	♏xxv.
Tr. arnicæ	ʒj.
Tr. gent. co.	℥j.
Inf. sennæ ad	℥viij.

M.

Dose: ℥ss. two or three times a day in dyspepsia with sluggish liver.

II

Glycer. pepsin. acid.	℥j.
Tr. nucis vom.	ʒss.
Acid. nitro-hydrochlor. dil.	ʒj.
Mist. gentian. co. ad	℥viij.

M.

Dose: ℥ss. in half a wineglassful of water immediately after meals, for eructations and feeble indigestion with constipation.

III

Sodii bicarbonatis	℥j.
Ammon. chloridi	℥ss.
Tr. gentian. co.	℥j.
Inf. aurant. co. conc.	℥j.
Aq. ad	℥viij.

M.

Dose: ʒij. in half a teacupful of warm water thrice daily, an hour after food, for excessive acidity and nervousness.

Mist. Taraxaci et Podophylli

(‘*Taraxacum and Podophyllin*’)

I

Podophyllin.	gr. vj.
Spt. ammon. arom.	ʒvj.
Dissolve and add	
Succi taraxaci	℥iss.
Tr. zingiberis	ʒij.
Dec. aloes co. ad	℥vj.

M.

Dose: ʒij. to ʒiv.

II

(*Baily's Ph. Ph.*)

Tr. podophyllini . .	ʒj.
Succi taraxaci . .	ʒvj.
Acid. nitro-hydroch. dil.	ʒj.
Spt. chloroformi . .	ʒiss.
Tr. chiratæ . . .	ʒij.
Aq. destil. ad . .	℥vj.

M.

Dose: ʒj. three times a day.

NOTE.—The first mixture is purely a liver-stimulant and intestinal tonic, and quickly gets these organs into healthy action. The second is also a hepatic stimulant, and where a stomachic corrective is required it is to be preferred.

Mist. Terebinthinæ Chiæ

I

Professor Clay's

Ethereal solution of Chian turpentine (1 in 2) .	℥ss.
Tragacanth mucilage .	℥iv.
Syrup	℥j.
Sublimed sulphur . .	℈j.
Water to . . .	℥xvj.

Dilute the mucilage with as much water, throw in the turpentine solution and agitate gently; add the remainder of the water and the sulphur, previously rubbed down with the syrup. Mix.

Dose: ℥j. three times a day.

II

Martindale's Modification

Powdered acacia . .	ʒviij.
Powdered tragacanth .	℈v.
Chian turpentine . .	ʒviij.
Ether	℥j.
Distilled water to . .	℥xvj.

Dissolve the turpentine in the ether and add the solution to the powders mixed in a dry mortar; then add boldly 2 oz. of water, triturate until emulsified, and add gradually 11 oz. of water. Stir frequently until the ether has evaporated, transfer to a bottle, and add water to 16 oz.

℥j. = tereb. Chia. ʒss.

Dose: ʒiij. daily in divided doses after food, gradually increased to ʒix.

NOTE.—This mixture was introduced in 1880 by Professor Clay, of Birmingham, as a remedy for cancer. Sulphur was considered a necessary ingredient at first, but is now frequently omitted and replaced by such things as resorcin.

Tonic Mixtures

I

(Dr. Milner Fothergill)

Quininæ sulphat. . .	gr. xvj.
Liq. strychninæ . .	ʒij.
Potassii citratis . .	ʒiss.
Tr. ferri perchlor. . .	ʒv.
Syrupi	℥j.
Aquæ ad . . .	℥iv.

Dissolve the quinine in 1 oz. of water with the aid of a sufficiency of dilute hydrochloric acid, add the liquor and tincture, and, lastly, the remainder of the ingredients mixed together.

Dose: ʒj. three times a day.

II

(Sir Felix Semon)

Syr. ferri phosphat. .	℥iss.
Gly. pepsin. acid. (B. & R.)	℥iss.
Liq. arsenicalis . .	♏xxxvj.
Liq. strychninæ . .	♏xxiv.
Aq. ad	℥vj.

M.

Dose: ℥ss. thrice daily after meals.

MISTURÆ PRO TUSSI

Cough or expectorant mixtures are very much in demand, and there is a great variety of them to choose from. Most of the formulas which are gathered here are the prescriptions of medical men, and are occasionally asked for by their names irrespective of the kinds of cough for which the prescriptions were originally written. Expectorant-mixtures are those which excite the secretion in the bronchial tubes—popularly speaking, 'loosen the phlegm.' Ipecacuanha, senega, and squill are the best examples of expectorants. Opium decreases the secretion, yet it is often found in the same mixture with active expectorants. As there are different kinds of coughs, a certain mixture may be found better adapted to produce an amelioration of one patient's condition than another's. Hence a 'panacea,' which looks delightfully potent on paper, and sets forth in glowing terms that a cure will be effected in a few doses, may sometimes be the very medicine which should be avoided in a particular case. But when the subject of the cough is a person who generally enjoys good health, the disorder has probably arisen through exposure to cold, wet feet, or other preventible causes. In such cases any remedy which exerts a soothing effect on the mucous membrane of the air-passages is capable of alleviating the spasm. It is for the latter class of coughs that the stock mixture, linctus, and syrup acquire their reputation.

I

Acidulated Glycerine for Coughs

'Elegant and effectual for the relief of tickling cough.'

Liq. morph. hydrochl.	℥v.
Acid. nitric. dil.	ʒxxvij.
Glycerini	℥xx.
Aq. flor. aurant. conc.	℥v.
Aq. ad	℥xl.

M.

Dose: ʒj. with a tablespoonful of water three or four times a day.

II

Aniseed Cough-balsam

Ol. anisi	ʒss.
Spt. chloroformi	℥j.
Tr. cinnamomi	ʒj.
Tr. camph. co.	℥iv.
Tr. senegæ	℥ss.
Oxymel. scillæ	℥vj.
Syr. tolutani	℥vij.

Dissolve the oil in the spirit of chloroform, add the mixed tinctures, then the oxymel, and lastly the tolu syrup. It may be coloured with caramel.

Dose : ʒj. three or four times a day.

III

Dr. Abercrombie's Cough-mixture

Tr. opii	♏clx.
Syrup. scillæ	℥ij.
Aq. cinnam.	℥iv.
Aq.	℥iv.

M.

Sig. : ℥ss. pro dosis.

IV

Balsamic Cough-syrup

Æther. chloric. (D. & F.)	ʒss.
Tr. pruni virg.	ʒij.
Tr. camph. co.	℥j.
Vin. ipecac.	ʒj.
Mucil. acaciæ	℥j.
Syr. tolutan.	ʒiij.
Syr. ad	℥iij.

Mix in above order.

Dose : ʒj., slowly sipped, thrice daily.

V

Black Currant Cough-elixir

Potass. nitrat.	℥ij.
Aq. rosæ	℥vj.
Chlorodyni	℥iij.
Vin. ipecac.	℥iv.
Ext. glycyrrh. liq.	℥iv.
Liq. papav. alb.	℥iv.
Oxymel. scillæ	℥xl.

Dissolve a pound of black-currant jelly in a pint of water, and, having made the above into a mixture *sec. art.*, mix the two, set aside for four days, and decant the clear mixture.

Dose : ʒj. three times a day.

VI

Brompton Cough-mixture

Ac. hydrocyanic. dil.	ʒss.
Liq. morph. hydrochlor.	ʒiss.
Syr. tolutan.	℥j.
Inf. rosæ ad	℥vj.

M.

Dose : ℥ss. in a wineglassful of water three or four times a day.

VII

Calf's Foot Cough-jelly

Morph. acet.	gr. lv.
Acid. citric.	gr. ccxvj.
Aquæ	℥xxx.
Gelatini	℥iij.
Glycerini	℥lxxij.
Tr. tolu	℥ss.
Spt. rectificat.	℥ss.
Vin. ipecac.	℥j.
Ess. vanillæ	ʒij.
Sacch. ust.	q.s.

M.

Soak the gelatine in 20 oz. of water ; when soft add the glycerine, and dissolve by the heat of a water-bath ; skim. Dissolve the acid and morphine acetate in 10 oz. of water. Add to it the tincture, spirit, wine, essence, and colouring, mix with the glycerine, and bring the weight up to 108 oz. with warm water. Strain and pour into 2-oz. w.m. bottles.

Dose for adults : ʒj. to ʒij. three times a day.

VIII

Chlorodyne Cough-mixture

Chlorodyni	ʒij.
Vin. ipecac.	ʒiij.
Glycerini	ʒvj.
Aq. ad	℥vj.

M.

Dose : ʒij. three or four times a day. The bottle to be well shaken before pouring out the dose.

IX

Cough-linetus for Adults

Liq. morph. hydrochlor. .	℥ij.
Vin. antimon. . .	℥ij.
Vin. ipecac. . . .	℥ij.
Syr. scillæ . . .	℥viij.
Syr. rhœados . . .	℥j.
Oxymel. ad . . .	℥xxxvj.

M.

Dose : ʒj. to be sipped three times a day and at bedtime.

X

Dr. Milner Fothergill's Mixture

Syr. scillæ . . .	℥j.
Acid. hydrobrom. dil. .	℥ss.
Spirit. chloroformi . .	℥ss.
Aq. ad	℥viij.

M.

Dose : ℥ss. three times a day ; to be sipped slowly.

XI

Hop Cough-mixture

Vin. ipecac. . . .	ʒj.
Tr. lupuli . . .	ʒiij.
Syr. scillæ . . .	ʒvj.
Spt. æther. nit. . .	ʒvj.

M.

Dose : A teaspoonful to be taken in water every four hours.

XII

Linseed Linetus

Ol. anisi . . .	♏iv.
Tr. tolutanæ . . .	℥ss.
Tr. senegæ . . .	℥ss.
Chlorodyni . . .	♏xlv.
Oxymel. scillæ . .	℥iss.
Inf. lini ad . . .	℥iij.

Dissolve the oil in the mixed tinctures ; add inf. lini ½ oz. and the rest of the ingredients.

Dose : ʒj. thrice daily.

XIII

Dr. Suckling's Bronchitis-mixture

Ammoniæ carbonat. .	gr. xxiv.
Tr. scillæ . . .	ʒij.
Tr. camph. co. . .	ʒij.
Inf. senegæ ad . .	℥viij.

M.

An eighth part every four hours.

XIV

Syr. Camphor. Co.

A cough-mixture often asked for, and originating from the Bristol Infirmary.

Make a syrup of opium by digesting 4 oz. of opium in 1 gallon of boiling water. When cold filter, make up the filtrate to 12 gallons with water, and dissolve in it 1 cwt. of sugar.

Tr. camph. co. (sine opio)	ʒij.
Oxymel. scillæ . .	ʒvj.
Syr. opii . . .	℥j.

Dose : One teaspoonful.

The preparation is now made in the Infirmary according to the following cheaper formula :—

Acidi benzoici . .	ʒiij.
Acidi acetici glacialis	℥iij. ʒv. ♏xx.
Aceti scillæ . . .	Oij.
Aceti ipecacuanhæ . .	Oij.
Olei anisi . . .	ʒij.
Camphoræ . . .	ʒij.
Tr. opii	℥x. ʒv. ♏xx.
Sacchari albi . .	lb. xxviij.
Sacchari usti . . .	q.s. [to give a colour like that of tr. camph. co.]
Aq. ad . . .	Cong. iv.

M.S.A.

Dose : ʒj. (= tr. opii ♏j.) occasionally.

XV

Stock Mixture, without Opium

Chloral. hydrat. . .	℈v.
Acet. ipecac. . . .	℥ij.
Syr. tolutani . . .	℥iij.
Aq. camph. . . .	℥iij.
Syr. pruni virgin. ad .	℥xx.

M.

Put this up in 4-oz. round-cornered bottles. Label—'Balsamic Cough-linctus—free from opium. It is a remarkably soothing preparation. Dose: A teaspoonful or more in half a wineglassful of water three or four times a day.'

XVI

White Cough-mixture

Syr. scillæ . . .	℥j.
Mucil. acaciæ . . .	ʒvj.
Vin. ipecac. . . .	ʒiij.
Aq. ad	℥vij.

Mix and pour the following mixed tinctures into the bottle:—

Tr. tolutan. . . .	ʒij.
Tr. camph. co. . .	ʒvj.

Shake gently.

Dose: ʒij. every three or four hours, or when the cough is troublesome.

Shake the bottle.

XVII

Dr. Theodore Williams's Mixture

Liq. morphinæ acetat. .	ʒj.
Spt. chloroformi . .	ʒj.
Succi limonis . . .	℥ss.
Mucil. acaciæ ad . .	℥ij.

M.

Dose: ʒj. when the cough is troublesome.

XVIII

Wilcox's Bronchitis-mixture

Apomorphin. mur. . .	gr. ss.
Potassii bromid. . .	℥ss.
Tr. sanguinar. . .	ʒj.
Aquæ	ʒvj.
Syr. tolutan. ad . .	℥iv.

M.

Dose: ʒj. in a glass of water every three hours.

XIX

Dr. J. Davis's Mixture

Carbonate of ammonium .	gr. xvj.
Syrup of tolu . . .	℥ss.
Tincture of squill . .	♏xl.
Compound tincture of cinchona . . .	ʒij.
Spirit of chloroform .	♏iv.
Rose-water . . .	℥ij.

Mix.

Dose: ʒj. every four hours as a stimulating expectorant in bronchitis and pneumonia.

XX

Dr. W. T. Caldwell's Bronchitis-mixture

Sulphate of quinine .	gr. j.
Extract of hemlock	gr. iij.–gr. v.
Dilute hydrobromic acid .	♏iv.
Spirit of chloroform .	♏x.
Water to . . .	℥j.

Mix.

One dose. To be repeated every four hours for chronic bronchitis in old people. The quinine acts as a germicide, and the purulent discharge is removed.

Children's Cough-mixtures.—The simplest possible remedies should be used for children. In most cases a few drops of ipecacuanha wine given on a piece of loaf sugar every two or three hours serves to make coughing easier. Put-up mixtures and syrups should be pleasant to the taste, nicely coloured and perfectly clear. They must, in short, be such that the children will look forward to the next dose. Opium and similar narcotics should be rigidly excluded. The great efficacy of bromides in bronchial affections, and the tolerance of them which children exhibit, favour the administration of these medicines. As a rule children under a year old should not get cough-mixtures; for them a single drop of ipecacuanha wine in a little sweetened water suffices to give relief.

I. Dr. Clark Burman's

Liq. ammon. acet.	ʒiv.
Vin. ipecac.	ʒiss.
Spt. æther. nit.	ʒj.
Syrupi	℥j.
Aq. ad	℥iij.

M.

Dose: ʒj. every four hours for children under six years and ʒij. for those above.

II

Ammon. carb.	gr. xv.
Vin. ipecac.	ʒij.
Syr. scillæ	ʒiij.
Syr. limonis	℥j.
Tr. croci	♏x.
Aq. ad	℥iij.

M.

Sig.: For children of one year and upwards a teaspoonful to a dessertspoonful, according to age, thrice daily.

III. Dr. Hillier's

Ammon. carb.	gr. xij.
Tr. scillæ	♏xx.
Syrupi	ʒij.
Inf. senegæ ad	℥ij.

M.

Dose: ʒj. to ʒij. every three hours.

IV

Tr. camph. co.	℥j.
Vin. ipecac.	℥j.
Vin. antimon.	℥j.
Spt. æther. nit.	℥iss.
Oxymel. scillæ	℥xx.
Aq. chloroform.	℥x.
Aq. destillat. ad	Oiv.

M.

Dose: ʒj. three or four times a day when the cough is troublesome.

An efficacious mixture, to be retailed in 2-oz. (1*s.* 1½*d.*), 4-oz. (2*s.* 3*d.*), and 6-oz. (2*s.* 9*d.*) bottles.

Whooping-cough requires slightly different treatment from ordinary winter coughs, and the following recipes are of special value here. No. v. is the prescription of the Victoria Hospital for Sick Children.

V

Ammon. bromid.	gr. xxxij.
Tr. lobeliæ	♏xxxij.
Tr. belladonn.	♏xxxij.
Syr. tolutan.	℥ss.
Aq. chloroformi	℥j.
Aq. ad	℥ij.

M.

Dose: ʒj. every four hours for children of one to five years.

VI

Ammon. bromid.	ʒj.
Vin. ipecac.	ʒiij.
Tr. senegæ	ʒss.
Tr. card. co.	ʒiss.
Syr. tolutan.	℥ij.
Aq. ad	℥iv.

M.

Dose: ʒss. to ʒj. thrice daily, and a double dose at bedtime.

VII

Codeinæ . . .	gr. j.
Acid. phosphoric. dil. .	ʒss.

Dissolve and add

Acid. hydrocyan. dil. .	♏viij.
Syr. tolutan. . . .	℥j.
Aq. ad	℥iv.

M.

Dose : A teaspoonful every four hours.

VIII

Vin. ipecacuan. . .	ʒj.
Syr. tolutani . . .	℥j.
Syr. mori ad . . .	℥iv.

M.

Dose : A half to a whole teaspoonful three or four times a day.

Mithridate

(Yorkshire formula)

P. bacc. lauri . . .	℥j.
P. pip. long. . . .	℥j.
P. sem. carui . . .	℥ss.
P. sem. anisi . . .	℥ss.
P. rad. gentian. . .	℥ij.
P. rad. curcum. . .	℥ij.
P. rad. valerian. . .	℥j.
P. rad. zingib. . .	℥j.
P. gum. acaciæ . .	℥ij.
Boli . . .	q.s. to colour

M.

Mucilago Althææ

Marshmallow-root (sliced)	℥j.
Boiling water . . .	Oj.

Infuse for a quarter of an hour, and strain with expression.

Mucilago Chondri

Irish moss . . .	ʒvj.
Distilled water .	a sufficiency

Wash the moss with cold water to clean it, then put it into 30 oz. of water, and heat for fifteen minutes, constantly stirring. Strain through muslin, and wash the strainer with water to 30 oz.

Mucilago Cydonii, U.S.P.

Quince-seed . . .	℥j.
Distilled water . .	Oiss.

Macerate the seed in the water for half an hour, agitating frequently, and drain through muslin without pressure.

Mucilago Dextrini, N.F.

Dextrin	℥x.
Distilled water . .	℥xx.

Mix, heat, stirring constantly, until the dextrin dissolves; add water to bring the weight to 30 oz., and strain through muslin.

Mucilago Salep, Ph.G.

Powdered salep . .	ʒij.
Cold water . . .	℥iiss.
Boiling water to . .	℥xxv.

Mix the salep with the cold water thoroughly; then pour on the boiling water and agitate well to make a uniform mucilage.

Mucilago Sassafras, U.S.P.

Sassafras-pith . . .	℥j.
Distilled water . .	Oiiss.

Macerate for three hours and strain.

Mucilago Ulmi, U.S.P.

Slippery-elm bark (sliced)	℥iij.
Boiling water . . .	Oiiss.

Macerate for two hours in a covered vessel and strain.

OLEATA—OLEATES

Oleates of the metals were suggested as medicinal agents by the late Mr. John Marshall, an eminent English surgeon. This was in 1872. He suggested that they should be made by dissolving the oxides in oleic acid. The oleate of mercury quickly obtained a secure footing in medicine. It was but a step to combine the alkaloids, such as aconitine and morphine, with oleic acid for topical application. In 1879 Dr. John V. Shoemaker, of Philadelphia, proposed to make the oleates by double decomposition of an impure alkaline oleate (Castile soap) and a metallic salt. He introduced a number of such oleates, one or two of which are in powder form, the rest unguents. Beringer advises the use of pure sodium oleate, made by saturating oleic acid with soda, and this is the best plan of working, although it may be explained that most of the powdered oleates are mixtures containing much stearate. Latterly, stearates have been introduced. These are readily obtainable in powder form by double decomposition, and their therapeutic effects are the same as those of the oleates.

Oleic acid, it may be noted, is a monobasic fatty acid, $HC_{18}H_{33}O_2$, molecular weight 282. The commercial acid, known as 'red oil,' is suitable for pharmaceutical purposes if it have a specific gravity of 0·890 to 0·900. For the purposes of calculation it may be regarded as pure. Subjoined is a list of the medicinal metallic oleates with their formulas and molecular weights, and from these data anyone with chemical knowledge may prepare the respective oleates by double decomposition between sodium oleate and the salt named in parentheses, unless when otherwise stated.

Oleic acid	$HC_{18}H_{33}O_2$	M.W. 282
Aluminium oleate	$Al(C_{18}H_{33}O_2)_3$	M.W. 880 (acetate)
Bismuth oleate	$Bi(C_{18}H_{33}O_2)_3$	M.W. 1052
Cadmium oleate	$Cd(C_{18}H_{33}O_2)_2$	M.W. 674 (sulphate)
Copper oleate	$Cu(C_{18}H_{33}O_2)_2$	M.W. 625 (sulphate)
Ferric oleate	$Fe(C_{18}H_{33}O_2)_3$	M.W. 899 (chloride)
Ferrous oleate	$Fe(C_{18}H_{33}O_2)_2$	M.W. 618 (sulphate)
Lead oleate	$Pb(C_{18}H_{33}O_2)_2$	M.W. 769 (acetate)

Manganese oleate	$Mn(C_{18}H_{33}O_2)_2$	M.W.	617 (sulphate)
Mercuric oleate	$Hg(C_{18}H_{33}O_2)_2$	M.W.	762
Mercurous oleate	$Hg_2(C_{18}H_{33}O_2)_2$	M.W.	962 (nitrate)
Nickel oleate	$Ni(C_{18}H_{33}O_2)_2$	M.W.	621 (sulphate)
Silver oleate	$AgC_{18}H_{33}O_2$	M.W.	389 (nitrate)
Sodium oleate	$NaC_{18}H_{33}O_2$	M.W.	304
Tin (stannous) oleate	$Sn(C_{18}H_{33}O_2)_2$	M.W.	681 (chloride)
Zinc oleate	$Zn(C_{18}H_{33}O_2)_2$	M.W.	627 (sulphate)

Sodium-oleate Solution is prepared as follows:—Heat in a large dish oleic acid 1,217 gr. to a temperature of 140° to 150° F., and add slowly to it a solution of caustic soda 192 gr. in a mixture of rectified spirit 6 dr. and distilled water 2 oz., stirring all the time until the acid is neutralised. The neutrality point is determined by dissolving a trifle of the soap in rectified spirit: as soon as this strikes a pale pink colour with phenolphthalein stop the addition of the soda. Now dissolve the soap in 35 oz. of warm water, filter, and wash the filter with warm water to make the filtrate measure 43 oz. when cold.

This solution of sodium oleate contains (approximately) one molecular proportion in grains of combined oleic acid in 10 oz., so that for the molecular proportion in grains of the salt of a dyad metal (*e.g.*, zinc sulphate 287 gr.) 20 oz. of the solution is required. Solution of Sodium Stearate is made similarly to the above with stearic acid ($HC_{18}H_{35}O_2$) 1,222 gr. and the same proportions of the other ingredients. This solution also contains in 10 oz. the molecular proportion in grains of stearic acid, and may be used for making stearates exactly in the same way as oleates. In preparing the metallic oleates, note particularly what is said in the paragraphs following.

Aconitine Oleate

A solution of aconitine 2 gr. in oleic acid 98 gr., prepared by gently heating.

Aluminium Oleate

Sodium-oleate solution ℥xxx. and solution of aluminium acetate (10 per cent., s.g. 1·058) ℥iij. ʒivss. diluted with a pint of water. Heat each solution to 120° F. and pour the acetate solution gradually into the sodium-oleate solution, stirring assiduously. Collect on a cotton filter, wash with warm water (120° F.), and press. Heat carefully on a water-bath to expel the water. When cold dissolve in petroleum ether, filter, recover the ether by distillation, and finally heat on a water-bath to expel the petroleum odour.

Atropine Oleate

Dissolve atropine 8 gr. in oleic acid 1 oz. by a gentle heat.

Bismuth Oleate

Dried and levigated bismuth oxide . .	1 troy oz.
Oleic acid .	3 troy oz. 295 gr.

Mix in a large basin, add 30 oz. of water, and boil, stirring all the time and replacing the water. When a little of the soapy mixture dropped in cold water gives no separation of oleic acid, and resembles an ointment, the operation is complete. Then decant the water and work the mass with a bone spatula to free it from adhering water.

Cocaine Oleate

Dissolve cocaine 6 gr. in oleic acid 94 gr. by a gentle heat.

Copper Oleate

Sodium-oleate solution 20 oz., copper sulphate 249 gr., dissolved in distilled water 20 oz. Heat the solutions to 140° F., and pour the copper solution slowly into the oleate solution, stirring constantly. Heat until the copper oleate becomes quite soft, decant the water, wash the oleate with two or three lots of warm water, and dry on a water-bath.

Lead Oleate

Lead acetate 379 gr., water and sodium-oleate solution same as copper oleate, and proceed in the same way.

Morphine Oleate

Dissolve morphine 1 gr. in oleic acid 60 gr.

Quinine Oleate, N.F.

Quinine 25 gr., oleic acid 75 gr. Triturate, then heat gently until dissolved.

Strychnine Oleate

Strychnine 2 gr., oleic acid 98 gr. Prepare as the last.

Veratrine Oleate, U.S.P.

Veratrine 2 gr., oleic acid 98 gr. Also prepare in the same way.

Zinc Oleate

Sodium-oleate solution 20 oz., zinc sulphate 287 gr., dissolved in distilled water 20 oz. Warm the solutions to 105° F., pour the zinc solution gradually into the oleate solution, stirring constantly. Collect the precipitate on a moist filter. Wash thoroughly with distilled water, dry on bibulous paper at a temperature not exceeding 100° F. When quite dry and cold rub lightly in a mortar to a uniform powder.

NOTE.—Zinci oleatum, B.P., is a soft mixture of zinc oxide 1 part and oleic acid 9 parts.

The following are the amount of bases combined with oleic acid in 100 parts of the respective normal or true oleates :—

Normal oleate of iron (ferric).	8·9	per cent. of anhydrous ferric oxide.
Normal oleate of copper .	12·7	per cent. of cupric oxide.
Normal oleate of zinc . .	12·9	per cent. of zinc oxide.
Normal oleate of bismuth .	22·2	per cent. of bismuth oxide.
Normal oleate of mercury .	28·4	per cent. of mercuric oxide.
Normal oleate of lead .	29·0	per cent. of lead oxide.

Normal oleate of morphine	50·3 per cent. of morphine.
Normal oleate of atropine	50·6 per cent. of atropine.
Normal oleate of cocaine	51·8 per cent. of cocaine.
Normal oleate of quinine	53·46 per cent. of quinine.
Normal oleate of strychnine	54·22 per cent. of strychnine.
Normal oleate of veratrine	61·15 per cent. of veratrine.
Normal oleate of aconitine	69·6 per cent. of aconitine.

The formulas for oleates of alkaloids on pages 565–6 provide solutions of the respective oleates in a large excess of oleic acid. For Naylor on oleates see *The Chemist and Druggist*, lvii. p. 524.

Olea Infusa or Infused Oils are favourite domestic medicines on the Continent. They are made from dried narcotic herbs, such as absinth, belladonna, hemlock, and henbane, in the following manner. Four parts of the cut herb are macerated for several hours in 3 parts (by weight) of rectified spirit, then 40 parts (by weight) of olive oil are added and the mixture is heated on a water-bath, with constant stirring, until the spirit is dissipated. The oil is then filtered, the herb being pressed and the pressings also filtered. The 'National Formulary' orders the oils to be made with lard oil and cottonseed oil, and adds a small percentage of ammonia solution ($\frac{1}{50}$ to 1 of herb), which helps to liberate the alkaloids and so make the oils more potent.

Subjoined are formulas for compounded and medicinal oils :—

Oleum Anchusæ

(*Red Oil*)

Alkanet-root (bruised)	℥j.
Olive oil	℥xx.

Macerate for fourteen days, agitating occasionally, and filter.

NOTE.—Nut, rape, and other oils are used in place of olive oil, according to the purpose for which the red oil is required. In the United States the old oleum hyperici, P.L. (oil of St. John's wort), is called 'red oil.' This oil is made by macerating 4 oz. of the fresh flowers ('freed from the cups') in 32 oz. of olive oil until the oil is sufficiently coloured.

Oil of Bricks

(syn. *Ol. Lateritium*, *Ol. Benedictum*, *Ol. Divinum*, *Ol. Philosophorum*, *Ol. Sanctum*, *&c.*)

The old way of making this was as follows :—Make bricks red hot, and quench them in olive oil till they have soaked up all the oil. Then break the bricks in little pieces small enough to be put into a retort, and distil with a sand-heat gradually raised. Separate the oil from the watery portion of the distillate.

Nowadays a mixture of linseed oil and oil of turpentine tinted with tar or with alkanet is given for oil of bricks.

Oleum Benzoatum

Finest benzoin, in coarse powder . . .	℥iv.
Methylated ether . .	℥viij.
Castor oil . . .	℥ij.

Macerate the benzoin in the ether for a day, shaking frequently. Filter into an evaporating basin, add the oil, and allow the ether to evaporate spontaneously (or recover by distillation, if made in large quantities).

In the proportion of 30 gr. to the ounce this unctuous preparation is admirably suited for benzoating ointments.

Oleum Britannicum

(syn. *British Oils*, *Oil of Petre*, *Oil of Stone*)

There are many formulas for this preparation. Originally oil of petre (*Petræ oleum*) was natural rock oil or petroleum, and some formulas aimed to imitate the appearance and qualities of the red or brown natural oil in days when it was both scarce and dear. British oils seemed to approach it, and gradually the two things have come to be synonymous. We quote two formulas which are actually in use, those in 'Gray' and other old authorities being wholly contradictory.

I

Oil of turpentine . .	℥xl.
Barbadoes tar . . .	℥xvj.
Oil of rosemary . .	ʒj.
Oil of origanum . .	ʒj.

Mix.

II

Rape oil (coloured with alkanet) . . .	Oj.
Oil of turpentine . .	℥ij.
Spirit of tar . . .	℥ij.

Mix.

Oleum Carbolicum

Usually made with olive oil, which gives a more antiseptic preparation than heavy petroleum oils. The common strength is 1 in 20, but as weak solutions as 1 in 40 are prescribed. The crystallised acid should be used. It may be fused by heat, and added to the oil, then shaken till solution is effected, or the crystals may be triturated in a mortar with a little of the oil, and the rest of the oil gradually added.

Ol. Cornu Cervi

(syn. *Ol. Animalis*, *Bone Oil*, *Dippel's Oil*, *Oil of Hartshorn*, *Oil of Man*)

An exceedingly complex oil obtained by the destructive distillation of bones, consisting chiefly of nitriles and pyrrols. Formerly used in medicine, as an antispasmodic, in doses of 10 to 30 drops, and it is still occasionally wanted, but is more used in industrial chemistry.

Driffield Oils

A preparation similar to this is made by mixing together in a 4-lb. jar 15 oz. of linseed oil and 5 oz. of spirit of turpentine. Add, with constant stirring, 10 dr. of strong sulphuric acid, and after a few hours a pint of water. Allow to stand all night, decant the oil, and add an ounce of spirit of tar to it. Take care that the oil does not froth over the jar when adding the vitriol.

Oil of Earthworms

Formerly made by boiling 1 part of earthworms in 1 part of sherry and 4 parts of olive oil until the wine was evaporated, then straining and pressing. Rape or olive oil, slightly coloured with tar, now meets the demand.

Oil of Exeter

Oil of wormwood	ʒss.
Oil of rosemary	ʒss.
Oil of origanum	ʒss.
Green oil	℥x.
Rape oil	℥xxx.

Mix.

NOTE.—This oil originally contained euphorbium in small quantity. Green oil is now commonly given for it.

Fox Oils

Dippel's oil flavoured with tincture of asafœtida or oil of amber. Used to put on sheep to keep off foxes.

Oleum Hyoscyami Compositum, N.F.

(syn. *Balsamum Tranquillans*)

Oil of absinth	3 drops
Oil of lavender	3 drops
Oil of rosemary	3 drops
Oil of sage	3 drops
Oil of thyme	3 drops
Infused oil of henbane	5 oz.

Mix.

Oleum Iodatum

Iodine	gr. xv.
Olive oil	℥ij.

Triturate the iodine with a little of the oil in a mortar, and add the rest gradually. Heat until solution is effected.

The iodine may be increased up to ʒj. to ℥ij.

Oleum Iodi

According to MacAlister's patent, No. 13,865, 1886, olive oil or castor oil is treated with 20 per cent. of its weight of sulphuric acid, and after twelve or twenty-four hours washed with brine (20° Twad.). The oil after separation is rendered slightly alkaline with ammonia or other alkali, and shaken with an alcoholic solution of iodine.

The following formula provides a similar preparation :—

Soft soap	℥j.
Glycerine	ʒij.
Ammonium iodide	ʒj.
Proof spirit to	℥ij.

Dissolve the iodide in ½ oz. of the spirit and the glycerine, with this mix the soap, add sufficient spirit to make 2 oz. of solution, and filter.

Oil of Kermes

In Worcestershire syrupus rhœados is given for oil of kermes.

Oil of Mucilages

Fresh marshmallow-root	℥vj.
Linseed	℥iij.
Fenugreek-seed	℥iij.
Water	℥xxxij.
Olive oil	Oiij.℥iv.

Bruise the root and seeds, boil in the water for half an hour, add the oil, and continue to boil until the water evaporates. Allow the solids to settle, and decant the clear oil.

Ol. Morrhuæ c̄ Ferri Iodido

Reduced iron	ʒss.
Iodine	ʒj.
Ether	℥ss.
Cod-liver oil to	℥xxxij.

Rub the iodine, iron, ether, and 1 oz. of the oil together until black, then add the rest of the oil, and after six hours filter.

Neatsfoot Oil

(Factitious)

Lard	lb. iij.
Colza oil	Cong. ij.

Melt the lard and add the oil, stirring well.

NOTE.—Genuine neatsfoot or trotter oil is made from the feet of oxen freed from blood and sinews. The feet are boiled in water for several hours, which furnishes a second quality of oil (obtained by skimming). A second boiling with fresh water furnishes the best oil.

Oleum Nervinum

'Nerve oil' is a name applied to neatsfoot oil, and also to the follow-preparation :—

Ol. carui . . .	ʒj.
Ol. rosmarini . . .	ʒij.
Ol. origani . . .	ʒij.
Ol. chamomil. infus. ad .	℥vj.

M.

Newmarket Oils

Ol. lini	Oj
Ol. terebinth. . . .	Oj.
Ol. rubri . . .	Oj.
Acid. sulphuric. . .	℥j.

Mix the oils, and add the sulphuric acid gradually, stirring all the time. In a few days decant the clear oil.

Nine Oils

Whale or other fish oil .	Cong. j.
Oil of turpentine . .	Oij.
Oil of amber . . .	℥v.
Red oil	℥v.
Oil of spike . . .	℥ij.
Oil of origanum . .	℥ij.
Barbadoes tar . . .	℥xl.
Camphorated oil . .	℥x.
Sulphuric acid . .	℥ij.

Mix in the same way as Newmarket oils.

Oleum Picis Nigrum

(syn. *Black Oils*)

Oil of turpentine . .	℥xx.
Linseed oil . . .	℥lx.
Sulphuric acid . .	℥ij.

Mix the oils, add the acid gradually, stirring well, then

Barbadoes tar . . .	3 oz.

Mix well, set aside for ten days, then decant the clear portion.

Oil of Rhodium

(syn. *Oil of Duty*)

True oil of rhodium is distilled from the roots of *Convolvulus Scoparius* and other species, and is obtainable ; but factitious oils are usually sold under the name, the oil being used as a bait or 'entice.' Frequently a mixture of sandalwood oil and otto of rose or oil of rose-geranium is sold for oil of rhodium. The following is also a common formula :—

Copaiba balsam . .	℥j.
Almond oil . . .	℥j.
Otto of rose . . .	♏xx.

Mix.

Oleum Sambuci

(syn. *Ol. Viride*, *Green Oils*)

Fresh elder-leaves . .	℥xvj.
Olive oil . . .	℥xxxij.

Boil gently until the leaves are crisp, and press out the oil.

May also be made by adding 1 dr. of chlorophyll to 25 oz. of warm olive oil, shaking till dissolved, and setting aside for a week to clear.

NOTE.—The old green oils was made by boiling 3 oz. each of laurel, rue, thyme, wormwood, and wild chamomile leaves in the same volume of olive oil as above until crisp, allowing to settle, and decanting the clear oil.

Oil of Spike

Oil of spike lavender is well known, but is not what is meant when 'oil of spike' is asked for in many parts of the country. The following are a few of the formulas in use :—

1

Ol. succini rect. . .	℥j.
Ol. terebinthinæ . .	Oj.

Rad. anchusæ to colour.

Macerate for three days, and strain.

II

Rad. anchusæ	℥ij.
Petrol. barbadensis	℥j.
Ol. terebinthinæ	lb. ij.

Macerate for three days, and strain.

III

Ol. lini	lb. j.
Ol. terebinth.	lb. j.
Petrol. barbad.	℥ij.
Ol. succini	℥j.

M.

IV

Ol. lavandulæ	℥j.
Ol. olivæ	℥ij.
Ol. terebinthinæ	℥ij.

M.

The first three preparations are for veterinary purposes, the fourth 'to rub the chest; for a cold.'

Stamford Oils

Camphor.	℥iij.
Ol. origani	℥vj.
Ol. terebinth.	℥xx.
Spt. rectificat.	℥xviij.
Ol. viridis	℥lxxij.

M.

Oil of Tartar

Salt of tartar allowed to deliquesce to a syrupy liquid.

Three Oils

Oil of lavender	℥j.
Oil of turpentine	℥j.
Red oil	℥j.

Mix.

Opodeldoc (Solid)

(syn. *Lin. Saponato-camphoratum, N.F.*)

White Castile soap, dried and powdered	ʒxij.
Camphor	ʒiv.
Rectified spirit	℥xx.
Oil of thyme	ʒss.
Oil of rosemary	ʒj.
Strong solution of ammonia (s.g. 0·880)	℥j.

Heat gently the Castile soap, camphor, and spirit in a flask until the solids are dissolved. Filter while hot into another flask; warm again, if necessary, to liquefy; add the oils and strong ammonia, thoroughly mix, and pour it into small dry phials, previously warmed. Immediately cork and cool.

NOTE. — Solid opodeldoc is ordered by the German Pharmacopœia to be prepared with curd or stearin soap. This preparation resembles Steers's, and is the opodeldoc universally used on the Continent.

Oxymel Camphoræ

Camphor	℥ss.
Rectified spirit	℥j.
Distilled water	Oiv.

Mix, filter, and add

Glacial acetic acid	℥j.
Honey	lb.

Boil and skim.

Papier Fayard

Gout-paper

The following is the process given in the expired patent:—The paper is rendered waterproof in the following manner:—Linseed oil, 500; garlic, chopped fine, 30; turpentine, 500; acetate of lead, 50; yellow ochre, 30; red lead, 15. The garlic is boiled with the oil, and stirred continuously. It is then strained, and the other substances added. The resulting preparation is next spread on tissue-paper, either with a sponge or a broad camel-hair pencil, such as is used by gilders, and allowed to dry at the ordinary temperature or in a heated room for about a fortnight. When the paper is dry spread the following mixture on it:—Olive oil, 200 parts; yellow wax, 6 parts; and red-lead, 100 parts.

Another process is:—Make a tincture with euphorbium ʒiij., cantharides ʒvj. in rectified spirit ℥iv. In the filtered tincture dissolve Venice turpentine ʒiij., and dip fine paper in the mixture.

Pasta Arsenicalis

I. Dr. McIntosh's Formula

Acidi arseniosi	ʒiv.
Cocainæ hydrochlor.	ʒiv.
Menthol.	ʒj.
Glycerini	q.s.

Reduce the solids to fine powder and mix, then make into a stiff paste with the glycerine.

II

Acidi arseniosi	ʒij.
Morphinæ acetatis	℈j.
Ol. caryophylli	ʒss.
Creosoti	q.s.

Mix the powders, add the oil and sufficient creosote to make a stiff mass.

Note.—These are used for devitalising the pulp of teeth. There are many other formulas, but the two given are sufficiently representative. Liquefied carbolic acid may be used instead of creosote.

Brook's Paste

Conf. sennæ	℥ix.
Crem. tart.	℥j.
Sulph. sub.	℥j.
Mellis	℥j.
Ol. amygdal.	℥ij.
Pulv. pip. nig.	℥ss.
Pulv. glycyrrhiz.	℥ss.
Pulv. fœniculi	℥j.
Pulv. sacch. alb.	℥j.

M.S.A.

Pasta Amyli Iodidi

(Tilbury Fox)

Powdered starch	℥j.
Glycerine	℥ij.
Water	℥vj.

Rub down the starch with the water, add the glycerine, and boil; when nearly cold add

Solution of iodine	℥j.

Mix well.

Pasta Calcii Chloridi c̄ Pice

(Unna)

Zinc oxide	℥ss.
Kaolin	℥j.
Calcium chloride	ʒij.
Huile de Cade	ʒij.
Distilled water	℥iiss.
Yellow vaseline	℥ij. ʒvj.

Mix the powders with the water, and incorporate the huile de Cade and vaseline, previously mixed. This mixture should be creamy when added to the powders and water.

Pasta Carbolica

(Lister)

Prepared chalk made into a paste with carbolic oil (1 in 10 of olive oil).

Pastæ Causticæ

I. Canquoin's

Equal parts of zinc chloride and flour. Dissolve the chloride in just sufficient water, then add the flour and water to make a thick paste.

In English practice glycerine is preferred to water in the last stage of the process.

Pastes are also made with 2, 3, 4, and 5 parts of flour to 1 part of zinc chloride.

II. London Paste

Caustic soda and slaked lime, equal parts, reduced to powder, mixed, and kept in a stoppered bottle until required, when about a third of its weight of water is added to make a thin paste.

III. Vienna Paste

Equal parts of caustic potash and quicklime, powdered and kept in a bottle.

NOTE. – This is *Potassa cum Calce*, U.S.P. Continental Pharmacopœias give varying strengths of the preparation, up to 3 parts of potash to 1 part of lime. When required for use the powder is made into a paste with rectified spirit. Martindale orders slaked lime in the Codex proportions—viz., 5 of potash and 6 of lime—but it is quicklime that the Codex and continental authorities prescribe. *Filhos's caustic* is a mixture of caustic potash 5 parts and quicklime 1 part, made by fusion.

Pasta Copaibæ

Copaiba	℥j.
Powdered cubebs . .	℥iij.
Extract of henbane . .	ʒj.
Powdered camphor . .	ʒj.
Treacle . . .	a sufficiency

Mix the camphor and the extract with the cubebs, add the copaiba, mix, and make into a stiff paste with the treacle.

Dose : ʒss. to ʒj.

Pasta Cubebæ

Take any quantity of light carbonate of magnesia and make it into a thin paste with copaiba, then add sufficient powdered cubebs to make it into a stiff paste.

Dose : ʒss. to ʒj.

Pasta Ichthyol.
(Unna)

Ammonium ichthyolate	℈ij. to ʒij.
Powdered dextrin . .	℥j.
Distilled water . .	℥j.
Glycerine . . .	ʒvj.

Dissolve the ichthyol in the water and the glycerine, mix with the dextrin, and heat on a water-bath until uniform.

Ihle's Paste

Amyli	℥ij.
Zinc. oxid. . . .	℥ij.
Lanolin. . . .	℥j.
Vaselin.	℥iij.

M.

This is the basis, and it is medicated with various substances, such as resorcin.

Pasta Naphthol.
(Lassar)

Beta-naphthol. . .	℥j.
Precipitated sulphur .	℥v.
Yellow vaseline . .	℥ij.
Soft soap . . .	℥ij.

Mix the powders, add the vaseline and soap, and mix thoroughly.

Pasta Plumbi
(Unna)

Litharge	ʒvj.
Vinegar	℥ij. ʒij.

Boil together until the solution is syrupy, then add

Starch	ʒv.
Water	℥ij.

Again boil, and add

Glycerine . . .	℥ij.

Mix, and heat if necessary until the paste weighs 5 oz.

Pasta Resorcin.
(Lassar)

	Fortior	Mitior
Resorcin . .	℥ij.	℥j.
Zinc oxide . .	℥ij.	℥iiss.
Starch . . .	℥ij.	℥iiss.
Vaseline oil . .	℥iv.	℥iv.

Rub all the powders together until they are impalpable, then make into a paste with the oil.

Pasta Zinci

I. Unna's Stiff

Zinc oxide . . .	℥iiss.
Kaolin	℥ss.
Benzoated lard . .	℥vij.

Mix intimately.

II. Unna's Soft

Prepared chalk	℥j.
Zinc oxide	℥j.
Linseed oil	℥j.
Lime-water	℥j.

Mix.

III. Lassar

Zinc oxide	℥iij.
Starch	℥iij.
Salicylic acid	ʒij.
Petroleum jelly	℥vj.

Levigate the powders together, and make into a paste with the vaseline.

This is the paste which is meant when Lassar's paste is ordered.

Pasta Zinci Chloridi c̄ Opio

Extract of opium	℈j.
Canquoin's paste	℥j.

Rub down the extract with a little water, and mix with the paste (which should be the kind made with glycerine).

Pasta Zinci Sulphurata
(Unna)

Zinc oxide	℥iss.
Precipitated sulphur	℥j.
Kaolin	℥ss.
Benzoated lard	℥vij.

Levigate the powders together, and mix with the lard.

Pepsinum Aromaticum, N.F.

Saccharated pepsin, U.S.P.	ʒxxiv.
Aromatic fluid extract, U.S.P.	ʒiss.
Tartaric acid	gr. xxiv.
Sodium chloride	gr. xxiv.

Mix by trituration, dry in warm air, and preserve in a stoppered bottle.

Pepsinum Saccharatum, U.S.P.

A mixture of U.S.P. pepsin 1 part and powdered sugar of milk 9 parts.

Pessi or Pessaries

The basis for these is cocoa-butter or gelatine mass, preferably the former. They are made 60 gr. and 120 gr. in weight—the former preferably. A suitable gelatine basis for pessaries and suppositories is

Finest gelatine	℥j.
Distilled water	℥j.
Glycerine	℥iiiss.

Soak the gelatine in the water, and when soft add the glycerine and dissolve by the heat of a water-bath.

The following are the strengths of medicated pessaries generally ordered:—

Lead acetate	$7\frac{1}{2}$ gr.
Lead acetate and opium	5 and 2 gr.
Alum	10 gr.
Alum and catechu	10 gr. of each
Atropine	$\frac{1}{20}$ gr.
Atropine sulphate and morphine acetate	$\frac{1}{40}$ and $\frac{1}{2}$ gr.
Belladonna extract	3 gr.
Bismuth subnitrate	15 gr.
Boric acid	10 gr.
Carbolic acid	2 gr.
Cocaine	$\frac{1}{2}$ gr.
Coniine	$\frac{1}{2}$ min.
Eucalyptus oil	ʒss.
Gallic acid	10 gr.
Iodoform	10 gr.
Lead iodide	5 gr.
Lead iodide and atropine sulphate	10 and $\frac{1}{20}$ gr.
Mercurial ointment	10 to 30 gr.
Morphine hydrochlorate	$\frac{1}{2}$ gr.
Opium	2 gr.
Potassium bromide	10 gr.
Potassium iodide	10 gr.
Quinine hydrochlor.	5 gr.
Tannic acid	10 gr.
Zinc oxide	10 gr.
Zinc sulphate	10 gr.
Zinc sulphocarb.	10 gr.

PILULÆ – PILLS

Abernethy's Pills

Pil. hydrargyri	gr. iij.
Ext. coloc. comp.	gr. ij.

Fiat pilula.

NOTE.—A 5-gr. pill, consisting of pil. col. co. 2 parts and pil. hydrarg. 1 part is also frequently given.

Aitken's Tonic Pill

Acid. arseniosi	gr. j.
Strychninæ	gr. j.
Ferri redacti	gr. xxxiij.
Quininæ sulphat.	gr. 50
Extract. gentianæ	q.s.

Fiat massa et divide in pil. 50.

Dose: One to two pills.

Pil. Aloes Diluta

(Dr. Marshall Hall's)

Ext. aloes bbds.	ʒj.
Saponis hispan.	ʒj.
Theriacæ	ʒj.
Ext. glycyrrhiz.	ʒj.

Liquefy on a water-bath to make a proper mass, and divide into forty-eight pills.

Dose: One at bedtime.

Pil. Aloes et Mastiches

(syn. *Lady Hesketh's Pills*, *Lady Webster's Pills*, *Crespigny's Pills*, *Dinner Pills*)

Pulv. aloes	ʒvj.
Pulv. mastiches	ʒij.
Pulv. rosæ rubræ	ʒij.
Syrupi	q.s.

Fiat massa et divide in pilulas clxxx.

Pil. Aloes et Podoph. Co., N.F.

(Janeway's)

Aloes	gr. j.
Res. podophylli	gr. ss.
Ext. bellad. alcohol.	gr. $\frac{1}{4}$
Ext. nucis vom.	gr. $\frac{1}{4}$
Glycer. tragacanth.	q.s.

ut fiat pilula

Pil. Aloini Co., N.F.

(syn. *Anti-constipation Pills*)

Aloin.	gr. $\frac{1}{2}$
Res. podophyll.	gr. $\frac{1}{8}$
Ext. belladonnæ	gr. $\frac{1}{4}$
Glycer. tragacanth.	q.s.

ut fiat pilula

NOTE.—Sir Andrew Clark's pills are sometimes called Pil. Aloin. Co. *Vide infra.*

Pil. Aloini, Strychninæ, et Belladonnæ, N.F.

Aloin.	gr. $\frac{1}{5}$
Strychninæ	gr. $\frac{1}{120}$
Ext. belladon. alcohol.	gr. $\frac{1}{8}$
Glycer. tragacanth.	q.s.

ut fiat pilula

Also made with double the quantity of strychnine.

Pil. Aloin, Strych., et Bell. Co. is the same, with ext. rhamni pursh. gr. ss. as excipient.

Anderson's Scots Pills

The original pills are well represented by pil. aloes et myrrhæ, B.P., which (saving excipient) contains the same ingredients as those mentioned in a copy of the original document deposited in the Rolls House. American and continental formulas more resemble that for pil. cambogiæ co., B.P., but anise is used as the flavouring, *e.g.*:—

Pulv. aloes bbds.	℥j.
Pulv. cambogiæ	℥j.
Pulv. saponis	ʒij.
Pulv. glycyrrhiz.	ʒij.
Ol. anisi	♏xx.
Syrupi	q.s.

ut fiat massa

Divide into 3-gr. pills.

The American formula contains only a scruple of gamboge and the same of colocynth to the ounce of aloes.

Antibilious Pills

'Big'

Compound extract of colocynth	ʒj.
Extract of henbane	℈j.
Blue pill	gr. xv.
Powdered ipecacuanha	gr. v.
Powdered scammony	℈j.
Oil of cajuput	♏iv.

Mix well, and divide into twenty-four pills.

Dose: Two pills at bedtime.

'Little'

Podophyllin.	gr. viij.
Aloin.	gr. vj.
Jalapin.	gr. vj.
Capsicin.	gr. iij.
Pulv. ipecac.	gr. iij.
Ext. hyoscy.	gr. iij.
Ext. nuc. vom.	gr. iiss.
Glycer. tragacanth.	q.s.

ut fiat massa

Divide in pilulas lx.

Dose: One or two at dinner-time or bedtime.

Anti-fat Pills

Ext. fuci vesiculosi	gr. iv.
Pulv. althææ	q.s.

ut fiat pilula

Dose: One or more pills with meals thrice daily.

Pilulæ Antistypticæ

(Dr. Macario's)

Ext. aloes socot.	℈j.
Ferri sulphat. gran.	℈ij.
Atropinæ sulphat.	gr. ⅛
Glycer. tragacanth.	q.s.

ut fiat massa

Divide in pilulas xxiv.

Dose: One to three immediately after dinner—to produce an easy, natural, non-diarrhœic evacuation.

Pilulæ Aperientes

I. Dr. Mitchell's

Pulv. aloes	gr. xxiv.
Pulv. rhei	gr. xlviij.
Hydrarg. subchlor.	gr. iv.
Antim. tartarat.	gr. ij.
Theriacæ	q.s.

ut fiat massa

Divide in pilulas xxiv.

Dose: One or more, as required.

II. Sir James Sawyer's

Aloes socot.	gr. j.–gr. iij.
Ferri sulphat.	gr. ¼
Ext. hyoscyami	gr. j.

Fiat pilula.

Dose: A pill to be taken at bedtime.

The amount of aloes to be adjusted to give a motion after breakfast each day.

III. Waugh's

Ext. nucis vomicæ.	gr. v.
Ext. aloes aquos.	gr. v.
Ext. belladonnæ fol. alc.	gr. iij.
Oleoresin. capsici	gr. ij.

M. Fiat massa et divide in pilulas xx.

Dose: One pill after each meal until two passages occur in a day, then reduce to half a pill, and continue diminishing until the regularity of the bowels is established.

IV. Sir Andrew Clark's

Aloin., ferri sulph. exsicc., ext. nucis vom., pulv. myrrhæ, et pulv. saponis, āā	gr. ss.

Fiat pilula.

Dose: One pill an hour before the last meal should the bowels not act during the day.

NOTE.—This formula was published in 1886, and the pills were specially recommended for anæmic people suffering from constipation, but have since become generally popular as an aperient and liver pill. If the fæces are dry and hard, and if there is no special weakness of the heart, pulv. ipecac. gr. ss. may be added to each pill. Should the action of the pill be preceded by griping and the character of the action be unequal, add ext. belladonnæ gr. ss.

Formulas for aperient pills might be quoted *ad infinitum*. There are many more in this section under specific names, such as Pil. Cathartic. Co., Pil. Prandii, &c., *which see.*

Pil. Arsenici Rubræ

(Dr. Wickham's)

Acidi arseniosi . .	gr. vj.
Antim. sulphurat. . .	ʒiss.
Pulv. glycyrrhizæ . .	ʒss.
Pulv. saponis . . .	℈j.
Ext. gentianæ . . .	ʒj.

Fiat massa et divide in pilulas xlviij.

Coat with gelatine.

Dose: One at meal times thrice daily for dry eczema, dandruff, and the like.

Pilulæ Asiaticæ

(syn. *Pilules Arsenicalis Asiatique, Tanjore Pills*)

Acidi arseniosi . .	gr. viiss.
Pulv. piper. nig. . .	gr. lxxv.
Pulv. acaciæ . . .	gr. xv.
Aquæ	q.s.

ut fiat massa

Divide in pilulas c.

Dose: One to two per day.

NOTE.—This is an alterative and tonic pill of great value, especially in skin-diseases. The above is the original formula, and it may be improved pharmaceutically by using glycerine of tragacanth as an excipient. Each pill contains acid. arsenios. gr. $\frac{1}{16}$ (almost) and pulv. pip. nig. gr. $\frac{3}{4}$. Squire gives gr. $\frac{1}{12}$ and gr. $\frac{1}{2}$ with ext. gentian. gr. j., which is a modification of the British Skin Hospital's formula.

Pil. Arsenicalis Co.

(Startin's)

Acidi arseniosi . .	gr. v.
Pulv. acaciæ . . .	ʒss.
Pulv. cinnam. co. . .	ʒiij.
Ext. jalapæ . . .	ʒij.
Glycerini . . .	q.s.

ut fiat massa

Divide in pilulas 100 æquales.

Dose: One pill or more twice daily.

Pil. Auri Chloridi Comp.

(Dr. Glennie's Pills for Impotency)

Auri et sodii chlor. . .	gr. iij.
Strychninæ sulphat. .	gr. j.
Zinci phosphidi . .	gr. iij
Ext. damianæ . . .	ʒj.

Fiat massa et divide in pilulas xxx.

Coat with gelatine, or insert in gelatine capsules.

Dose: One thrice daily.

Pilulæ Benedictæ

(syn. *Fuller's Pills*)

Originally a pill composed of aloes (℥vj.), senna (℥iij.), asafœtida, galbanum, and myrrh (of each ℥iss.), mace and saffron (℥ss.), sulphate of iron (℥x.), and oil of amber (℥j.), massed with honey and spirit, and divided into 5-gr. pills. Pil. aloes et asaf., B.P., is now considered its legitimate successor, but it wants the iron, which, as an emmenagogue, is a most important ingredient.

Blaud's Pills

(The 'Original' Formula)

Sulphate of iron
Carbonate of potash, of each
equal parts

Reduce the two substances separately to a fine powder. Mix them thoroughly by trituration until they begin to liquefy; then add enough clarified honey to render the mixture quite liquid, and evaporate the mass until it is of a pilular consistence.

Note.—This is the first published formula for Blaud's pills; but Blaud's own formula has never been published. The British Pharmacopœia now gives a formula under the name *Pilula Ferri.*

Boisragon Pills

(Dr. Hewson's)

Hydrarg. subchlor.	gr. xij.
Pulv. scammonii	gr. xij.
Ext. coloc. co.	℈ij.
Pulv. aloes soc.	gr. viij.
Ol. carui	♏iv.

Fiat massa cum aqua, et divide in pilulas xij.

Dose: One or two at bedtime.

Pil. Cascaræ Sagradæ Comp.

Ext. nucis vom.	gr. ss.
Iridin.	gr. xij.
Euonymin.	gr. xij.
Ext. hyoscyam.	gr. xij.
Ext. rhamni pursh.	gr. xxxvj.

Fiat massa (c. pulv. glycyrrh.) et divide in pilulas xxiv.

Dose: One or two at bedtime.

Pil. Cathartic. Co., U.S.P.

Hydrarg. subchlor.	gr. xij.
Ext. jalapæ	gr. vj.
Ext. coloc. co.	gr. xv.
Pulv. cambog.	gr. iij.

Mix the powders, mass with the extract of jalap, aided by a little water, and divide into twelve pills.

Note.—Use a warm mortar, and very little water.

Pil. Cathartic. Vegetabil., U.S.P.

Ext. coloc. co.	gr. xij.
Ext. hyoscyami	gr. vj.
Ext. jalapæ	gr. vj.
Ext. leptandræ	gr. iij.
Res. podophyll.	gr. iij.
Ol. menthæ pip.	gtt. iij.
Aq.	q.s.

ut fiat massa

Divide in pilulas xij.

Chamomile and Rhubarb Pills

Rhubarb, in powder	℥ij.
Socotrine aloes, in powder	℥ij.
Extract of chamomile	℥ij.
Oil of caraway	ʒj.
Oil of cinnamon	ʒj.
Treacle	a sufficiency to make a mass

Mix the oils with the rhubarb by triturating for five minutes; then add the aloes and extract, and mass. Divide into 3-gr. pills.

Dose: One pill may be taken one hour before dinner to restore the appetite. Two may be taken occasionally at bedtime, as a gentle aperient.

Christison's Aperient Pills

Pil. coloc. c̄ hyos., B.P. gr. j.

Dose: One or two at bedtime.

Pil. Cochia

Pil. colocynth. co., B.P. . gr. v.

Pil. Codeinæ Co.

(syn. *Antidiabetic Pills*)

Codeinæ	gr. vj.
Ext. rhamni pursh.	gr. xxiv.
Ext. lactucæ	ʒss.

Fiat massa et divide in pilulas xij.

Dose: One pill twice a day.

Note.—The dose of codeine is gradually increased.

Pil. Cupri c̄ Opio

(syn. *Diarrhœa and Dysentery Pills*)

Pulv. cupri sulphat.	gr. vj.
Pulv. opii	gr. vj.
Ext. hæmatoxyli	gr. iij.
Gly. tragacanth.	q.s.

ut fiat massa

Divide in pilulas xij.

Dose: One pill every four hours.

Pilulæ Diureticæ

Pulv. scillæ	ʒj.
Pulv. digitalis	ʒss.
Hydrarg. subchlor.	gr. xv.
Pulv. opii	gr. xv.
Syrupi	q.s.

ut fiat massa

Divide in pilulas lx.

Dose: One or two morning and evening.

Note.—This is an old, but most excellent, pill for dropsical cases.

Dzondi's Pills

One-grain pilules, each containing hydrarg. perchlor. gr. $\frac{1}{20}$. Used in syphilitic affections. The treatment commences with one pill four times daily, then after a week two pills, and so on, until thirty pills are taken daily.

Easton's Pills

(Martindale)

Ferri phosphatis	gr. xvj.
Quininæ pur.	gr. xij.
Strychninæ	gr. ss.
Pulv. sacch. alb.	gr. viij.
Acid. phos. conc.	gtt. xx.

Triturate the strychnine with the phosphate, add the rest of the powders, and mass quickly with the acid. Divide into sixteen pills.

Each pill equals 1 dr. of Easton's syrup.

Female Pills

Dr. Priestley's Pill for Relieving Menstrual Pain

Ext. belladonnæ	gr. $\frac{1}{3}$
Camphoræ	gr. iij.
Ext. hyoscyami	q.s.

Fiat pilula.

Dose: One pill every three or four hours.

For Amenorrhœa

Ferri sulphat. exsicc.	gr. xij.
Ext. nucis vom.	gr. iss.
Pil. aloes et myrrhæ	ʒss.
Apiol.	♏x.
Pulv. tragac. co.	gr. v.

Mix the iron, tragacanth powder, and extract with the apiol, add the pill and sufficient dec. aloes co. conc. to mass. Divide into twelve pills.

Dose: One at twelve o'clock, and two at bedtime.

Another

Ferri sulph. exsic.	gr. xij.
Ext. aloes aquos.	gr. xij.
Ext. hellebor. nig	gr. xij.
Ergotin.	gr. xv
Ol. sabinæ	♏vj

Fiat massa et divide in pilulas xij.

This pill cannot be retailed without conforming to the regulations for the sale of poisons. The formula is a modification of one like

Hooper's

Ext. aloes aquos.	gr. xij.
Ferri sulph. exsicc.	gr. vj.
Ext. hellebor. nig.	gr. vj.
Pulv. myrrhæ	gr. iij.
Pulv. canellæ	gr. iij.
Pulv. zingiberis	gr. iij.
Dec. aloes co. conc.	q.s.

ut fiat massa

Divide in pilulas xij.

Dose: One thrice daily.

Dr. MacIntosh's

Quininæ sulphat.	gr. xij.
Camphoræ	gr. xij.
Pulv. ipecacuanhæ	gr. vj.
Pulv. opii	gr. iij.
Ext. stramonii	gr. iij.
Glycyr. tragacanth.	q. s.

ut fiat massa

Divide in pilulas xij.

Dose: One three times a day, beginning three days before the period, and continuing for two days after it commences.

Dr. Tarrant's

Ferri sulph.	gr. xxiv.
Pulv. aloes soc.	gr. xxiv.
Pulv. myrrhæ	gr. xxiv.
Ol. pulegii	♏iv.
Ext. glycyrrh.	gr. xxiv.

M. Ft. pil. xxiv.

Chamomile, Pennyroyal, and Steel

Ferri sulph. exsic.	℥j.
Pulv. aloes	℥j.
Pulv. myrrhæ	℥ss.
Ol. pulegii	ʒj.
Ext. chamomillæ	℥iss.

Triturate the oil with the powders, mass with the extract, and divide into 4-gr. pills.

Dose: One thrice daily, increased, if necessary, to two pills.

Pil. Ferri et Arsenici

Ferri redacti	gr. xxiv.
Quininæ sulphat.	gr. xxxvj.
Acid. arseniosi	gr. j.
Ext. nucis vom.	gr. vj.
Glycer. tragacanth.	q.s.

ut fiat massa

Divide in pilulas xxiv.

Dose: One pill after food thrice daily for anæmia accompanied by nervousness.

Pil. Ferri Carbonatis

(Vallet)

Ferri sulphat.	ʒiiss.
Sodii bicarbonat.	ʒij.
Syrupi	ʒx.
Aq.	℥ix.

Boil the water, and to 3 oz. add half of the syrup. Dissolve the sulphate in this portion. In the rest of the water and syrup dissolve the carbonate, and mix the solutions. Collect the precipitate on calico, wash with sweetened water, press the precipitate, add it to

Pulv. sacch. alb.	gr. xxiv.
Mellis	℈iv.

Evaporate on a water-bath to a pilular consistence, and divide into 4-gr. pills.

Dose: As Blaud's pills.

Pil. Ferri Comp., U.S.P.

(Griffith's)

Pulv. myrrhæ	ʒiiss.
Sodii carbonatis	gr. lxxv.
Ferri sulphatis	gr. lxxv.
Syrupi	q.s.

Rub the myrrh (freshly powdered) with the carbonate, then with the sulphate, and beat into a mass with the syrup. Divide into 100 pills.

Pil. Ferri Iodidi Comp.

(Dr. Buckler's)

Iodi	gr. ij.
Ferri iodidi	℈j.
Potassii iodidi	℈ij.
Ext. conii	℈j.

Triturate the first three ingredients until quite smooth; mass with the extract and a little powdered sugar, and divide into twenty pills.

Dose: One three times daily half an hour after food in scrofulous affections.

Pil. Ferri Protochloridi

Iron wire, cut small	ʒij.
Hydrochloric acid	℥j.
Water	℥ij.

Mix in a flask, and heat gently until effervescence ceases, boil for a few minutes, and evaporate until it crystallises on stirring; then mass with

Powdered sugar	℈x.
Powdered liquorice	℈x.
Powdered tragacanth	℈j.

Divide into 144 pills, and varnish with tolu.

Dose: One or more thrice daily for anæmia.

Note.—Protochloride of iron in crystals may be used if available—viz., 288 gr. for the gross of pills.

Gout and Rheumatic Pills
(syn. *Antilithic Pills*, *Pilulæ Antiarthriticæ*)

I. Becquerel's

Quininæ sulphat.	gr. xv.
Pulv. colchici sem.	gr. xv.
Ext. digitalis	gr. vj.
Glycer. tragacanth.	q.s. ut fiat massa

Divide in pilulas xx.

Dose: One twice or three times a day.

II. Sir Benjamin Brodie's

Ext. coloc. co.	gr. xvj.
Ext. rhei	gr. xvj.
Pil. hydrarg.	gr. xvj.
Ext. colchici acet.	gr. vj.

Fiat massa et divide in pilulas xij.

Dose: One or two at bedtime.

III. Budie's

Ext. coloc. co.	gr. xxiv.
Ext. colchici	gr. xij.
Hydrarg. c̄ cretâ	gr. xij.
Syrupi	q.s. ut fiat massa

Divide in pilulas xij.

Dose: One at bedtime.

IV. Sir A. B. Garrod's

Ext. colchici acet.	gr. vj.
Ext. rhei	gr. vj.
Ext. aloes socot.	gr. vj.
Ext. belladonnæ	gr. j.

Fiat massa, et divide in pilulas vj.

Dose: One at bedtime twice a week.

V. Similar to Laville's

Extract of winter cherry	ʒiij.
Silicate of soda	ʒj.

Make a mass and divide into 5-gr. pills.

Dose: Four to ten pills daily.

VI. A Stock Pill

Ext. coloc. co.	ʒxij.
Pil. hydrarg.	ʒvij. gr. xij.
Ext. colchic. acet.	ʒiv. gr. xlviij.
Pulv. ipecac. co.	ʒiv. gr. xlviij.
Syrup. et glycer. tragacanth.	q.s. ut fiat massa

Of this mass 100 gr. is to be divided into twenty-four pills, which are to be rolled in the following powder:—

Pulv. glycyrrh.	℥ij.
Pulv. amyli	℥ij.
Pulv. cretæ gall.	℥j.

Mix and sift through a fine sieve.

Dose. One at bedtime. This is a reliable pill, which has been used with success for a generation.

Pilulæ Gummosæ

Galbanum, opoponax, myrrh, and sagapenum, of each ℥j., asafœtida ℥ss. Reduce to powder, mass with saffron syrup, and divide into 5-gr. pills.

Dr. Hamilton, Jun.'s, Pills

Ext. coloc. co.	ʒj.
Ext. hyoscyami	ʒss.

M. et divide in pilulas xxiv.

Note. Pil. coloc. et hyos., B.P., gr. v., is frequently, but erroneously, given for the above. Hamilton, Sen.'s, pills are the old Edinburgh Pharmacopœia aloetic pill—viz., equal parts of soap and Socotrine aloes.

Heim's Pills

(syn. *Pil. Digitalis et Opii Co.*)

Quininæ sulphat.	gr. xij.
Pulv. digitalis	gr. vj.
Pulv. opii	gr. iij.
Pulv. ipecac.	gr. ij.
Glycer. tragacanth.	q.s.

ut fiat massa

Divide in pilulas xij.

Dose: One every six hours.

NOTE.—Dr. Heim's name is connected with various pills, but the above one (used for checking night sweats in phthisis) is best known in England.

Pilulæ Helvetii

Pulv. aluminis	ʒv.
Pulv. sang. draconis	ʒiiss.
Mellis	ʒiiss.

Fiat massa et divide in pilulas cc.

Dose: One pill twice to five times a day for cough and hæmorrhage.

Livingstone's Rousers

Pulv. resin. jalap.	gr. xviij.
Pulv. rhei	gr. xviij.
Hydrarg. subchlor.	gr. ix.
Quininæ sulph.	gr. ix.
Dec. aloes co. conc.	q.s.

ut fiat massa

Divide in pilulas xij.

Dose: Two or three pills every four hours until they purge efficiently.

NOTE.—This was the favourite fever-pill of Dr. David Livingstone, the African traveller, and is still much used in tropical countries for warding off impending fever.

Pilulæ Imperiales

(syn. *Kaiserpillen or King's Pills*)

Pulv. jalapæ resin.	ʒj.
Pulv. aloes	ʒj.
Hydrarg. subchlor.	ʒss.
Pulv. colocynthid.	gr. xv.
Ext. gentian.	ʒss.

Mix thoroughly, and mass with a few drops of water. Divide into 100 pills.

NOTE.—This is a favourite household pill in Germany.

Pil. Lithiæ Comp.

(Dr. Hugh Lane's)

Lithiæ benzoat.	ʒss.
Sulphur. præcip.	℈j.
Quininæ salicyl.	gr. iv.
Glycer. tragacanth.	q.s.

ut fiat massa

Divide in pilulas xij.

Pilulæ Metallorum, N.F.

Ferri redacti	℈j.
Quininæ sulphat.	℈j.
Strychninæ	gr. j.
Acidi arseniosi	gr. j.
Glycer. tragacanth.	q.s.

ut fiat massa

Divide in pilulas xx.

Morison's Pills

Aloes, jalap resin, extract of colocynth, and gamboge, of each gr. xv.: rhubarb and myrrh, of each ʒss. Mass and divide into fifty pills.

This formula is from the Belgian Pharmacopœia.

Nervine Pills

Zinci oxidi	℈j.
Caffeinæ citrat.	℈j.
Glyc. tragacanth.	q.s.

ut fiat massa

Divide in pilulas xx.

Dose: One every four hours.

Neuralgic Pills

I. Brown-Séquard's

Extract of henbane	ʒiss.
Extract of hemlock	ʒiss.
Extract of ignatia	ʒj.
Extract of opium	ʒj.
Extract of aconite	℈ij.
Extract of Indian hemp	ʒss.
Extract of stramonium	gr. xxiv.
Extract of belladonna	℈j.

Mix and make into 3-gr. pills.

Dose: One, to be repeated in four hours if necessary.

II. Gross's

Sulphate of quinine	ʒj.
Sulphate of morphine	gr. iss.
Strychnine	gr. j.
Arsenious acid	gr. iss.
Extract of aconite	ʒss.

Mix the powders intimately, and mass with the extract and sufficient glycerine of tragacanth. Divide into thirty pills.

Dose: One pill every four or six hours, but not more than three to be taken in a day.

III. Dr. Prosser James's

Quininæ sulphat.	gr. xvj.
Ext. aconiti alcohol.	gr. j.
Glycer. tragacanth	q.s.

ut fiat massa

Divide in pilulas xvj.

Dose: One every two, three, or four hours. In severe cases two for the first dose.

IV. Dr. Neligan's

Quininæ valerianat.	gr. j.
Ext. quassiæ	gr. ij.

Fiat pilula.

Dose: One every four hours in the intermittent neuralgia of hysterical women.

V. For Stock

Butyl-chloral hydratis	gr. iij.
Ext. gelsem. alcohol.	gr. ss.
Glycer. tragacanth.	q.s.

Make one pill.

Dose: One every two hours.

VI

Dried sulphate of iron	℥j.
Sulphate of quinine	℥ss.
Gingerin	℈j.
Hydrochlorate of morphine	℈ij.
Extract of henbane	℥j.
Glycerine of tragacanth, a sufficiency.	

Triturate the quinine and morphine with the dried sulphate of iron, then add the gingerin and the extract, using as much glycerine of tragacanth as will make a good mass, which beat well to incorporate the ingredients thoroughly. Divide into 3-gr. pills, and roll in French chalk and starch.

Dose: One pill, morning, noon, and night, while the pain lasts. Two may be taken at bedtime, if necessary.

Niemeyer's Pills

Pulv. scillæ	gr. j.
Pulv. digitalis	gr. j.
Pil. hydrarg.	gr. j.
Glycer. tragacanth.	q.s.

Ft. pilula.

NOTE.—Heim's pill without ipecacuanha is sometimes given; but the above is better suited for dropsy.

Pil. Opii et Camphoræ, N.F.

Pulv. opii	gr. j.
Pulv. camphoræ	gr. ij.
Glycer. tragacanth.	q.s.

ut fiat pilula

Pil. Phosphori

I. Allen & Hanburys'

Phosphori	gr. j.
Carbon bisulph.	♏x. vel q.s.

Solve.

Pulv. saponis	gr. xxxv.
Pulv. resin. guaiaci	gr. xxxv.
Glycerin.	gtt. xij.
Pulv. glycyrrh.	gr. xij. vel q.s.

ut fiat massa ℈v.

To be divided into pills of the strength required, and varnished or pearl-coated.

II. Martindale's Improved

Phosphorus	gr. x.
Oil of theobroma, cut small	ʒviij. gr. x.
Purified carbon bisulphide	fl. gr. cc.

Dissolve the phosphorus in the bisulphide, add the cocoa-butter, and shake in the hand until dissolved. Make up to 750 fl. gr. with bisulphide, if necessary.

75 fl. gr. = phosphorus gr. j.

To Make the Pills

Above solution	fl. gr. 54
Powdered acacia	gr. xviij.
Syrup, by weight	gr. xviij.

Mix the solution quickly with the acacia; add the syrup, triturate into a uniform mass until fit to roll, and divide into twenty-four pills.

One pill = phosphorus gr. $\frac{1}{33}$.

III. R. H. Parker's

Phosphorus	gr. ss.
Carbon bisulphide	ʒss.
Powdered liquorice	gr. xxiv.
Glycerine	♏iv.
Powdered tragacanth	gr. ij.
Syrup	a sufficiency

Dissolve the phosphorus in the bisulphide, and pour upon the mixed powders; stir with a spatula until the bisulphide is nearly evaporated (the powder not becoming dry), mass with syrup, and divide into twenty-four pills.

The above quantity of phosphorus provides a pill containing gr. $\frac{1}{48}$. Any other desired quantity of phosphorus may be used with the same quantities of other ingredients.

Pil. Picis

Black pitch	ʒiiiss.
Powdered liquorice	ʒj.
Powdered ginger	ʒss.

Melt the pitch and stir in the powders. Roll the mass out on a warm slab, and divide into 5-gr. pills.

Pilulæ ad Prandium

(syn. *Digestive Pills*, *Dinner Pills*)

I. Chapman's, N.F.

Ext. aloes aquos.	gr. xviij.
Pulv. mastiche	gr. xviij.
Pulv. ipecacuanhæ	gr. xij.
Ol. fœniculi	♏iij.

Fiat massa c̄ dec. aloes co. conc. et divide in pilulas xij.

II. Cole's, N.F.

Ex. aloes aquos.	ʒj.
Pil. hydrargyri	ʒj.
Pulv. jalapæ	ʒj.
Antimon. tartarat.	gr. j.

Mass as No. I., and divide into fifty pills.

III. Gregory's

Ext. aloes aquos.	gr. xij
Pulv. rhei	gr. xij
Pulv. ipecacuanhæ	gr. xij
Pulv. saponis	gr. xij

Fiat massa c̄ aqua et divide in pilulas xij.

IV. Hooper's

Aloes socotrinæ	ʒss.
Pulv. zingiberis	ʒss.
Ext. anthemidis	℈ij.

Fiat massa et divide in pilulas xx.

V. For Stock

Ext. aloes aq.	gr. vj.
Pulv. rhei	gr. xij.
Pulv. capsici	gr. vj.
Pepsin.	gr. xij.
Ext. gentianæ	q.s.

ut fiat massa

Divide in pilulas xij.

Note.—One or two of any of these pills to be taken immediately before dinner.

Pilulæ Quadruplices, N.F.

One grain each of ferri sulph. exsicc., quin. sulph., and ext. aloes aq., and ext. nucis vom. gr. ¼, made into a pill with ext. gentianæ.

Pil. Olei Ricini

I

Ext. aloes aquos.	ʒiv.
Pulv. saponis	ʒj.
Gingerin.	ʒj.

Mix and mass with a few drops of dec. aloes co. conc. Divide into 1½-gr. pills.

II

Pulv. rhei	ʒiss.
Pulv. potas. sulph.	ʒiss.
Pulv. saponis	ʒss.
Ol. ricini	ʒss.
Ol. croton.	♏v.

Mix intimately and mass with thin treacle. Roll quickly into 5-gr. pills.

Note.—These formulas are commonly followed, and the second is the more correct; but it is better to give any mild aperient pills and call them 'Aperient Pills, mild as castor oil.'

Ricord's Pills

Several different kinds of pills are known as Ricord's. The following are the famous French physician's more common prescriptions:—

I. Pil. Calomel. Co.

Hydrarg. subchlor.	gr. xv
Pulv. conii	ʒss.
Pulv. saponis	ʒss.

Fiat massa c̄ aqua et divide in pilulas xx.

Dose: One pill; increase by one every five days until six are taken, then diminish the number in the same manner.

II. Pil. Camphrées

Camphor and lactucarium of each 45 gr., massed and divided into twenty pills. Dose: Five or six per day.

III. Pil. Opiacées Camphrées

Camphor 45 gr. and opium extract 6 gr. made into a mass with mucilage and divided into sixteen pills, of which two or three are taken in the morning.

IV. Pil. Protoiodure de Mercure

Hydrarg. iodid. flav.	gr. x
Lactucarii	gr. xl
Ext. opii	gr. xv.
Ext. conii	gr. lxxv.

Fiat massa et divide in pilulas lx.

Dose: One pill in the morning, and another after dinner.

Pil. Roborans

An old pill sometimes made by massing rhubarb with Venice turpentine. The following is a formula in use at the end of the eighteenth century :—

Ferri peroxid.	ʒij.
Asafœtidæ	ʒij.
Res. guaiaci	ʒij.
Pulv. opii	℈j.
Ext. cinchonæ	ʒij.
Ext. gentianæ	ʒij.
Syrupi	q.s. ut fiat massa

Divide into 5-gr. pills.

Pil. Rufi

This is pil. aloes et myrrhæ, B.P.

Squibb's Podophyllum Pills

(syn. *Pil. Podoph.*, *Bellad. et Capsici*, *N.F.*)

Res. podophyll.	gr. vj.
Ext. bellad. fol. alc.	gr. iij.
Pulv. capsici	gr. xij.
Pulv. sacch. lact.	gr. xxiv.
Pulv. acaciæ	gr. vj.
Glycerini et syrupi	q.s.

Triturate the podophyllin and capsicum with the sugar of milk, add the acacia and extract, and mass with syrup and glycerine. Divide into twenty-four pills.

Pil. Terebinthinæ Chiæ

(Prof. John Clay's)

Terebinth. chiæ	ʒiss.
Sulphur. subl.	ʒj.

Mass in a warm mortar, and divide into thirty pills.

Pilulæ Triplices

I. Nat. Form.

Ext. aloes aquos.	gr. xxiv.
Pil. hydrargyri	gr. xij.
Res. podophylli	gr. vj.

Fiat massa c̄ dec. aloes co. conc. et divide in pilulas xxiv.

II. Dr. John W. Francis's

Ext. aloes aquos.	℈iiss.
Scammonii	℈iiss.
Pil. hydrargyri	℈iiss.
Ol. crotonis	♏iij.
Ol. carui	♏xv.
Tr. aloes et myrrhæ	q.s.

Fiat massa et divide in pilulas lx.

Pil. Tussi

(Brooke-Muriel)

Ext. conii	ʒj.
Ext. lactucæ	ʒj.
Ext. hyoscy.	ʒj.
Pulv. ipecac. co.	ʒj.

Fiat massa et divide in pilulas lx.

Dose : One morning and evening.

Warburg's Fever-pills

(syn. *Pil. Antiperiodic.*, *N.F.*)

Extract of aloes	gr. xxiv.
Rhubarb	gr. xij.
Angelica-seed	gr. xij.
Elecampane	gr. vj.
Saffron	gr. vj.
Fennel	gr. vj.
Zedoary-root	gr. iij.
Cubebs	gr. iij.
Myrrh	gr. iij.
White agaric	gr. iij.
Camphor	gr. iij.
Sulphate of quinine	ʒss.
Extract of gentian	a sufficiency

Reduce the drugs to a fine uniform powder, and mass with extract of gentian. Divide into twenty-four pills.

NOTE.—The aloes should be omitted if a non-purging pill is desired. Each pill represents a teaspoonful of the tincture.

Pill-coating Solutions

Gelatine

Gelatine (best French) .	℥iiss.
Acacia mucilage . .	℥iss.
Boric acid . . .	ʒiij.
Distilled water . .	℥viiss.

Dissolve the acid in the water, and in the solution immerse the gelatine until soft; dissolve on a water-bath and add the mucilage, stirring all the time.

Pearl Coating

I

Acacia mucilage . .	℥j.
Tragacanth mucilage .	℥j.
Syrup	℥j.
Water	℥iv.

Mix.

II

Tr. tolutan. . . .	℥j.
Syrupi	℥j.
Mucilag. acaciæ . .	℥j.

M.

NOTE.—Pearl coating is an art which can only be acquired by practice. The requisites on the small scale are an evaporating dish and two globular shaped tin boxes or, failing them, covered pots. The best powder for coating is French chalk, alone or mixed with light carbonate of magnesia in the proportion of 1 oz. to 2 lbs. of chalk, 5 to 10 drops of a solution of methyl blue being mixed with the powder to counteract its yellow tint. The powder should be sifted several times through a fine sieve. The pills are to be moistened with the solution in the dish; this must not be overdone, otherwise the pearl coating will be too thick; then, without delay, transfer them to one of the boxes containing plenty of powder, and rotate rapidly. Next, transfer to and rotate in the second box without chalk, in order to impart a polish.

Sugar Coating

On the retail scale the best plan is to proceed as for pearl coating, using a mixture of pearl-coating powder 7 parts and sugar 1 part, or ½ dr. of saccharin to the pound of French chalk. The true sugar coating is done with sugar syrup containing a small percentage of starch, applied by means of a revolving pan.

Pill Excipients

I. Dispensing Syrup.—Equal parts by volume of glycerine, acacia mucilage, and syrup.

II. Roe's, for ess. oils, phenol, etc.—Soak gelatine ʒvj. in warm water for a few minutes, drain, and put in a dish with glycerine ʒij.; dissolve and bottle. A grain suffices for 2 minims of oils, etc. Melt the jelly on a slab, add the oils, work well, and mass with fullers' earth, flour, soap, or pulv. trag. co., according to the nature of the ingredient.

III. Martindale's Kaolin Ointment.—Vaseline ℥j., paraffin ℥j. Melt and add sifted kaolin ℥j. Stir until cold.

IV. Remington's General.—White glucose ℥iv., powdered acacia ʒiss., benzoic acid gr. j., glycerine ℥j. (by weight).

V. Theriacanth.—Rub tragacanth ʒj. with rectified spirit ʒij. in a mortar; then add quickly treacle ℥ij. (previously made fluid by warming), and thoroughly mix.

Pill Varnishes

I. Tolu syrup residues ℥j., ether ℥iij. Dissolve and allow to stand until clear. Decant the clear portion.

II. Sandarac ʒv., tr. tolu ʒij., ether to ℥ij. Dissolve.

III. Sandarac ℥j., resin ℥ij., ether ℥vj. Dissolve.

IV. (Martindale's). — Sandarac ℥j., absolute alcohol ℥j. Dissolve.

This is much too thick; S.V.R. ʒij. is better.

PULVERES—POWDERS.

Pulvis Acaciæ Comp., N.F.

(syn. *Pulv. Gummosus, Ph. Germ.*)

Pulv. acaciæ . . .	ʒxv.
Pulv. glycyrrhizæ . .	ʒx.
Pulv. sacch. alb. . .	ʒv.

Mix intimately by sifting.

Pulvis Acetanilidi Co., N.F.

(syn. *Kamna-Fuga*)

Acetanilidi . . .	gr. 50
Caffeinæ . . .	gr. ij.
Acid. tartaric. . .	gr. iij.
Sodii bicarbonatis . .	gr. xlv.

Reduce separately to fine powder and mix.

Dose: Gr. v. to gr. x. every four hours for neuralgia.

B.P.C. formula is: Acetanil. 7, caffein. 1, sod. bicarb. 2. Dose: 3 to 5 gr.

Pulvis Alkalinus Comp.

(Dr. Robert Bell's)

Pepsin.	ʒiij.
Pulv. aromat. . .	ʒiij.
Pulv. sodii bicarb. . .	℥j.
Mag. carb. pond. . .	℥ss.

Mix by sifting.

Dose: Half a teaspoonful or more in a little water after food. For indigestion.

(Th. Hosp. Ph.)

Pulv. potass. chlorat. .	℥j.
Pulv. potass. bicarb. .	℥j.
Pulv. sodii chloridi .	℥ss.

M.

A teaspoonful in a small tumbler of hot water; to be drawn through the nose each evening for post-nasal catarrh.

Pulvis Antiasthmaticus

(syn. *Asthma Cure*)

I. (Himrod's Style)

Pulv. lobeliæ . . .	℥ij.
Pulv. stramon. fol. . .	℥ij.
Pulv. theæ nigræ . .	℥ij.
Pulv. potas. nit. . .	℥ij.

M.

II

(As modified by Sir Morell Mackenzie)

To the mixture No. I. add

Pulv. anisi . . .	ʒij.
Pulv. fœniculi . .	ʒij.

The first formula for pulv. antiasthmat. was published by Mr. J. S. Hearn, an American pharmacist, in 1883. In his monograph on 'Hay-fever' the late Sir M. Mackenzie remarks:—'A patent American remedy, consisting of nitrate of potash and powdered herbs, of which stramonium or datura tatula is probably the most important, is sold under the name of "Himrod's cure," and when this powder is lighted and the fumes inhaled they sometimes quickly relieve the spasm.' In a footnote he adds:—'The original formula of this remedy has been published in *The Chemist and Druggist* (December, 1883). It is said to consist of stramonium, lobelia inflata, black tea, and nitre in equal parts. If a little powdered aniseed or fennel be added to this preparation, it certainly produces a compound which in appearance and effect is very similar to Himrod's remedy. Careful microscopical examination made at my request by those familiar with vegetable structures has, however, failed to detect any tea-leaf in Himrod's preparation, though, of course, it is readily seen in specimens of powder prepared according to the formula just given. On the other hand, bearing in mind the fact mentioned in the text, that tea when drunk often gives relief to asthmatics, it is not at all improbable that the herb may have some effect if burned and inhaled.'

The 'Extra Pharmacopœia' gives a similar formula to the second, and calls it 'Pulv. Lobeliæ Co.,' which is the title of a well-known eclectic powder (*vide infra*). Squire's 'Companion' gives a mixture of powdered stramonium, datura tatula, Indian hemp, and lobelia, each ʒvj., nitre ℥j., and eucalyptus oil ʒss. This is called 'Pulv. Stramonii Co.'

Crevoisier's Asthma-powder

Powdered belladonna-leaves	of each equal parts
Powdered foxglove	
Powdered stramonium	
Powdered sage	
Powdered nitrate of potash	

Press into ʒj. tablets.

Pulvis Antidiabcticus
(Dr. Monin's)

Sodii bicarbonatis	℥ij.
Sodii benzoatis	℥x.
Sodii salicylatis	℥v.
Lithii carbonatis	℥iv.

M.

Dose: A teaspoonful at each meal.

Pulvis Basilicus

Pulv. scammonii	℥j.
Hydrarg. subchlorid.	℥j.
Antimonii oxidi	℥j.
Pulv. potass. bitart.	℥j.

M.

Pulvis Bismuthi Comp.

This is a common title for many articles, generally indigestion-powders. Mr. Martindale uses the name for Ferrier's snuff. Several London hospitals have the title for powders containing 5 gr. each of bismuth carbonate, magnesium carbonate, and a few grains of acacia or pulv. trag. co. The following is Sir T. Grainger Stewart's prescription :—

Bismuthi subnit.	℥xij.
Sodii bicarbonat.	℥vj.
Pulv. rhei	℥ij.
Pulv. cinnamomi co.	℥j.

Mix and sift three times.

Dose : 10 gr. to 30 gr. in water an hour after food.

Blood-purifying Powder

Dried Glauber salts.	℥j.
Dried Epsom salts	℥vij.
Common salt	℥iss.
Tartaric acid	℥iss.
Bicarbonate of soda	℥ij.

All in powder, and to be well mixed.

Dose : ʒj. in a glass of water every morning.

Burn-powder

Zinci oxidi	℥j.
Mag. carb. levis	℥j.
Pulv. acid. boric.	℥j.

Mix and sift.

Directions : To be dusted freely on the affected part.

Pulv. Calumbæ Co.
(St. George's Hosp.)

Bismuthi subnit.	ʒiij.
Sodii bicarbonat.	ʒiij.
Pulv. acaciæ	ʒiij.
Pulv. rhei	ʒiss.
Pulv. calumbæ	ʒiss.
Pulv. cinnamom.	ʒiss.
Pulv. zingiberis	ʒiss.

M.

Dose : Gr. xv. to gr. xxx.

NOTE.—This powder is sometimes wanted, but it should be noted that the Scotch pulv. calum. co. consists of 3 parts each calumba and rhubarb, and 10 parts of sodium bicarbonate.

Cancer-powder

(Esmarch's Painless)

Hydrarg. subchlorid.	℈iv.
Acidi arseniosi	gr. x.
Morphin. hydrochlor.	gr. x.
Pulv. acaciæ	ʒj.

M.

Pulv. Caseinæ Sacch.

An excellent emulsifying agent made by shaking a gallon of milk with ℥iiss. of ammonia. Allow the fat to separate; draw off the clear subnatant liquid, and acidify slightly with acetic acid. Collect the precipitated casein, wash, dry, powder, and mix with ʒiiss. of bicarbonate of soda and ʒix. of powdered sugar to each drachm of the alkaline mixture.

Children's Powders

I. (Plain)

Hydrarg. subchlor.	ʒj.
Pulv. sacch. alb.	ʒv.

M.

II. (Pink)

Pulv. antimonialis	ʒij.
Hydrargyri subchloridi	ʒij.
Pulv. sacchari albi	ʒvj.
Carmini	gr. j.

Triturate the carmine with the calomel, then gradually work in the sugar.

III. (Cooling or Fever)

Potass. chlorat.	ʒj.
Pulv. glycyrrhiz.	ʒj.
Pulv. sacchari albi	ʒiv.

Mix by sifting.

IV. (Worm)

Santonin.	ʒj.
Hydrarg. subchlor.	ʒj.
Pulv. sacch. alb.	ʒiv.

M.

The following are the doses of each of the above powders:—

Two to four months	gr. iss.
Four to six months	gr. iij.
Six to ten months	gr. ivss.
Ten months and upwards	gr. vj.

It is advisable to put them up in 3-gr. or 6-gr. powders. The worm-powders should not be given to children under nine months.

Children's Aperient-powder

Leptandrin	gr. iij.
Sugar of milk	gr. xij.
Compound jalap-powder	gr. xxx.

Mix and make into twelve powders. One is a dose for five years.

Pulv. Chlor. Co.

(Cent. Thr. Hosp.)

Equal parts of borax, bicarbonate of soda, potassium chlorate, and sugar.

Composition-powder

(syn. *Pulv. Myricæ Co., N.F.; Dr. Coffin's Powder*)

Powdered bayberry root-bark	℥xij.
Powdered ginger	℥vj.
Powdered capsicum	℥j.
Powdered cloves	℥j.

Mix.

Sometimes 6 oz. of powdered pinus canadensis is added to the above, and, indeed, many formulas have been published for it, but the above one is generally followed. The N.F. name is unfortunate, because the eclectics have a pulv. myricæ co. of older date, which consists of equal parts of powdered bayberry-bark and blood-root. It is used as a cephalic snuff.

Corrasa Compound

This is an advertised remedy, the advertiser giving his clients the following prescription :—

Ext. corrasa apimis .	ʒviij.
Ext. selarmo umbelifera .	ʒiv.
Powdered alkermes latifolia	ʒiij.
Ext. carsadoc herbalis .	ʒvj.

Dr. A. B. Lyons analysed the compound, as procured from Rev. Joseph T. Inman, New York, and found the constituents to be substantially as follows :—

Powdered gentian, about	15	parts
Powdered liquorice ,,	15	parts
Powdered sugar ,,	50	parts
Sodium bicarbonate ,,	17·5	parts
Powdered cochineal ,,	2·5	parts

Pulvis Emeticus

Equal parts of sulphate of zinc and powdered ipecacuanha.

Dose for an adult : ℈ij. in warm water.

Powders for Gleet

Pulv. cubebæ . . .	ʒss.
Pulv. acaciæ . . .	gr. xv.
Pulv. potassii nitrat. .	gr. x.

M. Fiat pulvis.

A powder to be taken twice a day in water.

Powder for Gout

Pulv. colchici sem. . .	℈j.
Magnes. sulph. exsicc. .	℥vj.

M.

Dose : A teaspoonful in half a tumblerful of water early in the morning.

Powder for Hæmorrhoids
(Dr. Prothero Smith's)

Sulphur. præcip. . .	lb.
Pulv. guaiaci . . .	℥iv.
Magnes. carb. pond. .	℥iv.

M.

Dose : A teaspoonful in a wine-glassful of water at night occasionally.

Pulv. Iodoformi Co., N.F

Iodoform . . .	ʒiv
Naphthalin . . .	ʒx.
Boric acid . . .	ʒvj
Oil of bergamot . .	ʒss

Triturate the oil of bergamot with the naphthalin, then add the iodoform and boric acid, and continue the trituration until a uniform powder is obtained.

NOTE.—This is intended as a dusting-powder. The odour of iodoform is well masked.

Pulv. Lobeliæ Co.
(Eclectic Emetic-powder)

Powdered lobelia . .	ʒvj
Powdered blood-root .	ʒiij
Powdered skunk-cabbage	ʒiij
Powdered ipecacuanha .	ʒiv
Powdered capsicum .	ʒj.

Mix.

Dose : ʒij. One-fourth of the dose to be given every fifteen minutes in an infusion of boneset (*Eupatorium perfoliatum*).

Pulv. pro Mist. Cretæ

Cretæ præparat. . .	℥viij.
Pulv. acaciæ . .	℥viij.
Ol. cinnamomi . .	ʒij.
Pulv. sacch. alb. . .	℥vss.

M.

℈ij. with water ℥j. makes mist cretæ.

Pulv. Morphiæ Comp., U.S.P.

(syn. *Tulley's Powder*)

Morphinæ sulphat. . .	gr. iij.
Camphoræ . . .	ʒj.
Pulv. glycyrrhizæ . .	ʒj.
Cretæ præcipitatæ . .	ʒj.

Rub down the camphor with a little rectified spirit, mix with the liquorice and chalk, add the morphine sulphate, and triturate until thoroughly mixed.

Dose: Gr. x.

Neuralgic Powders

Ferri peroxid. . .	gr. viij.
Cinchonid. sulph. . .	gr. ij.
Pulv. zingib. . . .	gr. iv.
Pulv. glycyrrhiz. . .	gr. iv.

M.

This for a dose; to be repeated every four hours.

See also Pulv. Acetanilid. Co.

Pulv. Pancreaticus Co., N.F.

(syn. *Peptonising-powder*)

Pancreatin . . .	gr. v.
Bicarbonate of soda .	℈j.

Mix. For one powder.

One powder is sufficient to peptonise 16 oz. of fresh cow's-milk, by proceeding in the following manner:—Add the compound pancreatic powder to 4 oz. of tepid water, contained in a suitable flask, and afterwards add 16 oz. of fresh cow's-milk, previously heated to 38° C. (100° F.). Maintain the mixture at this temperature during thirty minutes, then transfer the flask to a cold place.

Milk thus peptonised should not be used when it has been kept over twenty-four hours, or when it has developed a bitter taste.

Pulvis Pepsini Comp., N.F.

(syn. *Pulvis Digestivus*)

Saccharated pepsin . .	ʒiss.
Pancreatin . . .	ʒiss.
Diastase[1] . . .	gr. x.
Lactic acid . . .	♏x.
Hydrochloric acid . .	♏xx.
Sugar of milk . . .	ʒviss.

Add the acids gradually to the sugar of milk, and triturate until they are thoroughly mixed. Mix the pepsin, pancreatin, and diastase, then incorporate this mixture, by trituration, with the sugar of milk, and sift. Preserve the powder in bottles.

Pistoia Gout-powder

(As sold by a Benedictine Monastery in Italy)

Powdered bryonia-root .	ʒiiss.
Powdered gentian . .	ʒiiss.
Powdered chamomile .	ʒiiss.
Powdered colchicum-root	ʒv.
Powdered betony . .	ʒx.

Mix and divide into 365 powders.

Dose: One powder is taken each day of the year in a full glass of hot or cold water.

Potter's Powder

Powdered camphor . .	ʒj.
Powdered ammonium carbonate . . .	℈iv.
Prepared chalk . .	ʒiv.

Mix.

Pulv. Rhei c̄ Sodâ

(Phar. Aberd. Inf.)

Pulv. rhei . . .	℥j.
Pulv. sodæ bicarb. . .	℥ij.
Pulv. cinchon. flav. .	℥iss.
Pulv. zingib. . . .	℥ss.

M.

Dose: Gr. x. to gr. xx.

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[1] Taka-diastase is a convenient form of diastase to use.

Pulv. Talci Salicylicus, N.F.
(syn. *Foot-powder*)

Salicylic acid . . .	ʒiss.
Boric acid . . .	ʒv.
French chalk . . .	℥vj.

All in fine powder and mixed.

Tyson's Powder

Antimonii oxidi . .	℈j.
Calcii phosphoris . .	ʒiij.

M.

Dose: Gr. v. to gr. x.

Saccharum Croci

Saffron	℥j.
Sugar in coarse powder .	℥xvj.
Boiling water . .	a sufficiency

Exhaust the saffron with as little water as possible by repeated infusion. Evaporate the liquors to a syrupy consistency; mix thoroughly with the sugar, dry, powder, and preserve in a bottle kept in a dark place.

NOTE.—This is for making syr. croci extemporaneously. Mr. George Barber says it keeps for years without deterioration. The formula for the syrup is:—Sacch. croci ʒij., aq. ʒij. Solve et adde syr. ad ℥j. M.

Sal Harrogas

Pulv. potass. sulph. c̄ sulph. . . .	℥iss.
Pulv. potass. bitart. .	℥v.
Mag. sulph. xtl. . .	℥xl.

M.

Put up in 2-oz. packets (first wrapper stearin or parchment-paper) and label 'The contents of the packet to be put into a wine-bottleful of water, and a wineglassful of the solution taken every morning.'

Sales Minerales

Following are formulas for a few artificial salts, representing the more important mineral waters. The quantities in each case should be added to 2 pints (40 oz.) of soft spring-water or distilled water.

Friedrichshall

Dried Epsom salts . .	℥ss.
Sodium chloride . .	ʒiij.
Dried Glauber's salts .	ʒj.
Sodium bicarbonate .	gr. xv.
Calcium sulphate . .	gr. x.
Sodium bromide . .	gr. ij.
Potassium sulphate . .	gr. iv.

Powder and mix.

Carlsbad

Dried Glauber's salts .	℈ij.
Sodium bicarbonate .	ʒss.
Sodium chloride . .	gr. xv.
Potassium sulphate . .	gr. ij.

Powder and mix.

Hunyadi

Dried Glauber's salts .	ʒv.
Sodium bicarbonate .	ʒiss.
Dried Epsom salts . .	℈ij.
Sodium chloride . .	gr. xxij.
Calcium sulphate . .	gr. viij.
Potassium sulphate . .	gr. j.
Ferrous sulphate . .	gr. ss.

Powder and mix.

Vichy

Sodium bicarbonate .	℈v.
Sodium chloride . .	gr. iv.
Potassium sulphate . .	gr. iij.
Calcium sulphate . .	gr. iiss.
Dried Epsom salts . .	gr. j.

Powder and mix.

If crystals are desired, dissolve the powders in a sufficiency of boiling water, filter, and crystallise. Again saturate the mother liquor, with the powder by boiling, and crystallise.

Sal Pepticum

Pepsin in powder . .	ʒj.
Cerebos salt . . .	ʒvij.

Mix, and sift three times.

NOTE.—Scale pepsin should not be used.

Sapo Unguinosus

(Unna)

(syn. *Salve-soap*, *Mollin.*)

According to the German Pharmaceutical Society's book of formulas this is made by saponifying 40 parts of lard with potash (50 parts of a solution of sp. gr. 1·130 evaporated to 40 parts) and 4 parts of rectified spirit by mixing and allowing to stand for twelve hours at 50° to 60° C., then adding 15 parts of glycerine to the soft soap formed. Both liquids and solids to be taken by weight. It contains 12 per cent. of free fat. The following are the more common combinations, the percentages representing the quantities of the medicaments in 100 parts:—

	Per cent.
Ammonium sulphydrate	5
Camphor . . .	5
Creolin . . .	10
Creosote . . .	10
Ichthyol (ammonia) .	5 to 50
Iodoform . . .	10
Iodol	10
Lanoline . . .	20
Naphthol . . .	1
Oil of cade 20, and ichthyol . . .	10
Oleum rusci . . .	10
Peruvian balsam . .	10
Potassium iodide[1] .	5 and 10
Precipitated sulphur .	10
Thymol . . .	10
Zinc oxide . . .	10

Sapo Unguinosus Mercurialis

Mercury	ʒx.
Mercurial ointment . .	ʒij.
Salve soap . . .	ʒxx.

Rub the mercury with the mercurial ointment (as in making the latter) and mix with the salve soap.

This is a great improvement upon the old 'Sapo mercurialis.'

Saponimenta, or Opodeldocs

Medicated opodeldocs are in demand on the Continent chiefly. They are made from cocoa-nut oil or Castile soap, or both, by dissolving the shredded soap in six times its weight of rectified spirit, and adding a solution of the medicament. The following examples by Dieterich will show the nature of the preparations and the manner of working. The ingredients are to be taken by weight:—

Arnica Opodeldoc

Cocoa-nut oil soap . .	ʒv.
White Castile soap . .	ʒj.
Rectified spirit . .	ʒxvij.

Dissolve by digesting at a gentle heat, then add

Tincture of arnica . .	ʒiiss.
Spirit of arnica (1 oil in 50)	gtt. ij.

Filter, and wash the filter with water to make the product weigh ʒxxv.

Chloroform Opodeldoc

Cocoa-nut oil soap . .	ʒx.
Castile soap . . .	ʒv.
Rectified spirit . .	ʒvj.

Dissolve as above, and add

Distilled water . .	ʒix.

Filter, and add

Chloroform . . .	℥iij. ʒvj.
Oil of lavender . .	♏xij.
Rectified spirit to . .	℥xiiss.

Mix.

---

[1] Dissolve in as much water.

Tar Opodeldoc

Cocoa-nut oil soap . .	ʒvj.
White Castile soap . .	ʒiv.
Caustic soda . . .	ʒss.
Rectified spirit . .	℥x.

Digest until the soap is dissolved, then add

Wood tar . . .	ʒx.
Oil of lavender . .	ʒss.

Continue the digestion for fifteen minutes, filter, and wash the filter with rectified spirit to 12½ oz. by weight.

Solutio Solventis Mineralis

(syn. *Liq. Arsenici Chloridi, P.L.*; *De Valangin's Solution*)

Arsenious acid . .	ʒss.
Hydrochloric acid . .	ʒiss.
Distilled water . .	℥xx.

Dissolve.

Dose: Three minims, gradually increased to 10 minims, thrice daily.

Frequently prescribed by Dr. John L. Milton.

Spiritus Ætheris Chloratus, known also as spt. æth. mur., spt. salis dulcis, spirit of hydrochloric ether, and dulcified spirit of salt. The old Edinburgh Pharmacopœias directed this spirit to be made by digesting together for two days 1 volume of muriatic acid and 3 volumes of rectified spirit, then distilling as long as the distillate does not effervesce with bicarbonate of soda. The spirit is occasionally in request, and is still frequently used on the Continent, where it is customary to add some peroxide of manganese in pieces to facilitate the formation of ethyl chloride. The dose of the spirit is a teaspoonful. Cooley and Squire state erroneously that it is Clutton's Febrifuge Spirit, which was made by acting upon sulphuric ether with hydrochloric acid, or upon rectified spirit 1 gal. with sulphuric acid 38 oz. (by weight) and hydrochloric acid 16 oz. (by weight), and distilling.

Spt. Ætheris Co.

(syn. *Hoffmann's Anodyne*)

Ol. vini	ʒiij.
Ætheris	℥viij.
Spt. rectificati . .	℥xvj.

M.

Spiritus Ætheris Nitrici, P.L.

(syn. *Sweet Spirit of Nitre*)

Add 4 oz. of nitric acid gradually to 3 lbs. of rectified spirit, and distil 32 oz.

Spiritus Ammoniæ Aromaticus

(Prepared without distillation)

Carbonate of ammonia .	℥ss.
Strong solution of ammonia . . .	℥j.
Volatile oil of nutmeg .	♏xxxiv.
Oil of lemon . . .	♏xlix.
Rectified spirit . .	℥xv.
Water	℥iiiss.

Dissolve the oils in the rectified spirit. Reduce the carbonate of ammonia to small fragments, place it in a well-stoppered 10-oz. bottle, add the water and strong solution of ammonia, and shake occasionally till the carbonate is dissolved. Filter if necessary, pour into the aromatised spirit gradually, and with constant stirring, and add sufficient distilled water to make the product measure 20 oz.

Terpeneless oil of lemon ♏iv. may be used instead of the natural oil; the resulting spirit keeping the colour better.

Spiritus Ammoniæ Dzondii

An alcoholic solution of ammonia containing about 10 per cent. of anhydrous ammonia.

Spiritus Aromaticus, N.F.

Compound spirit of orange	℥j.
Rectified spirit	℥xv.

Mix.

Should be kept in full bottles in a dark place.

Spiritus Aurantii Compositus, U.S.P.

Oil of bitter-orange peel	℥iv.
Oil of lemon	℥j.
Oil of coriander	ʒij. ♏xl.
Oil of star-anise	♏xl.
Rectified spirit to	℥xx.

Mix.

Spiritus Camphoræ (Rubini)

Camphor-flowers	℥iv.
Rectified spirit	℥v.

Dissolve.

[Camphor and absolute alcohol of each equal parts by weight is another formula. The above is the proper one, and equals 1 in 2.]

Dose: 2 to 5 drops on lump-sugar. Should be given with caution.

Spiritus Capillaris (Unna)

Resorcin	ʒj.
Castor oil	ʒss.
Eau de Cologne	℥iss.
Rectified spirit to	℥vj.

Dissolve the resorcin in 4 oz. of spirit, add the oil and eau de Cologne, and make up.

Spt. Cardamomi Comp., N.F.

(A colourless substitute for tr. card. co.)

Oil of cardamoms	♏xij.
(or pulv. cardam. sem. ʒiij.)	
Oil of caraway	♏iv.
Oil of cassia	♏ij.
Rectified spirit	℥viij
Glycerine	℥j.
Distilled water to	℥xvj.

Mix in the above order.

Spt. Formicorum, P.G.

Formic acid	ʒiv.
Rectified spirit	℥xss.
Distilled water	℥iij. ʒij.

Mix.

Dose: Five to 15 drops thrice daily.

Spt. Formicorum Co.

(syn. *Eau de Magnanimité*)

Oil of cassia	gtt. xv.
Oils of cloves, cubebs, and cardamoms, of each	gtt. vj.
Spirit of ants	℥v.

Mix.

Spiritus Limonis, U.S.P.

Oil of lemon	ʒxiiss.
Lemon peel, freshly grated	ʒxiiss.
Rectified spirit to	℥xxxij.

Dissolve the oil in 30 oz. of spirit, add the lemon peel, macerate for twenty-four hours, filter, and wash the filter with spirit to make 32 oz. of finished product.

Spiritus Melissæ

Oil of melissa	♏v.
Oil of lemon	♏xx.
Rectified spirit	℥v.

Mix.

Spt. Olei Volatilis

The 'National Formulary' orders spirit of any essential oil to be made by dissolving 1 part of the oil in 15 parts of spirit, both by volume. It will be noted that the B.P. spirits of the same nature are 1 in 50.

Spiritus Ophthalmicus.

I. Nat. Form.

Oil of lavender	ʒss.
Oil of rosemary	ʒiss.
Rectified spirit	ʒxxiij.

Mix.

II. Dr. Pagenstecher's

Spirit of melissa	℥vj.
Spirit of lavender	℥iss.
Spirit of camphor	ʒiss.
Sweet spirit of nitre, P.L.	ʒj.

Mix.

Directions: Apply to the eyes six or eight times a day.

Spiritus Phosphori, U.S.P.

Phosphorus	gr. ix.
Absolute alcohol	℥xvj.

Boil in a flask fitted with a reflux condenser until the phosphorus is dissolved, and when cold make up to 16 oz. with absolute alcohol.

ʒj. = gr. $\frac{1}{12}$.

Spiritus Saponatus Kalinus

(Hebra's Potash-soap Spirit)

Linseed oil	℥iiiss.
Rectified spirit	℥iij. ʒvj.
Caustic potash	ʒv.
Distilled water	ʒv.

Dissolve the potash in the water and add to the spirit and oil contained in a pint flask. Shake until clear; then add the following mixture gradually:—

Spirit of lavender	℥viiiss.
Rectified spirit	℥v.
Distilled water	℥iij.

Filter.

Unna's soap spirit is of similar composition. These spirits are frequently, but erroneously, made with sapo mollis, B.P.; for example, *Lin. Sapon. Mollis*, U.S.P., is soft soap 65, oil of lavender 2, S.V.R. 30, and water to make 100. Many dispensers prefer this formula, but the preparation has not the efficacy of the linseed-oil one.

Steatina, or Steatins, also called Salve Mulls and Ung. Extensa, are preparations intermediate between ointments and plasters proposed by Mielcke, of Hamburg (Unna's late pharmaceutical associate), for dermatological practice. Mutton-suet is the principal fat in them, and the finished steatins are spread upon muslin in the proportion of 100 grammes (ʒxxv.) to 1 metre by 20 cm. (39 inches by 8 inches).

Steatinum Acidi Borici

Powdered boric acid	℥j.
Benzoated lard	℥ij.
Mutton-suet (rendered)	℥vij.

Melt the fats, triturate the acid in a warm mortar with some of the melted fats, transfer to the rest, and stir occasionally until cold.

Steatin. Diacylon.

Lead plaster	℥v.
Mutton suet	℥iij.
Benzoated lard	℥ij.

Melt together and stir occasionally until cold.

Steatin. Ichthyol.

Ammonium ichthyolate	ʒj.
Benzoated lard	℥j.
Mutton suet	℥viij.

Prepare in the same way as steat. ac. boric.

Steatin. Resorcin.

Resorcin	ʒj.
Benzoated lard	℥ij.
Mutton suet	℥vij.

Prepare in the same way as steat. ac. boric.

Steatin. Zinci Oxidi

Made from zinc oxide, in the same way and of the same strength as steat. resorcin.

Suppositoria.—The following are the adult doses of the most commonly used medicaments required for each suppository with a cocoa-butter or glyco-gelatine basis. The usual size of suppositories is 15 gr.—*i.e.*, the moulds are made to hold about 15 gr. of cocoa-butter, so that in compounding the suppositories allowance is made for the medicament when it is bulky and exceeds 3 gr. in each suppository :—

	Grains
Aloin	1
Atropine	$\frac{1}{20}$
Belladonna extract	$\frac{1}{2}$ to 2
Belladonna and morphine hydrochloride	$\frac{1}{2}$ and $\frac{1}{4}$
Bismuth subnitrate	5
Boric acid	3
Carbolic acid	1
Chloral hydrate	5
Cocaine hydrochloride	$\frac{1}{2}$ to 2
Ergotin	3
Gall and opium	5 and 1
Hamamelin	1 and 2
Hamamelin with opium	$\frac{1}{4}$
Hamamelis extract	1
Ichthyol (ammon.)	2
Iodoform	2
Opium	1
Red gum and nux vomica extract	5 and 1
Rhatany ext. and morphine hydrochloride	8 and $\frac{1}{10}$
Santonin	3 to 6
Tannic acid and belladonna extract	3 and 2
Tannic acid and morphine hydrochloride	5 and $\frac{1}{4}$
Tannic acid and opium	5 and 1
Zinc oleate	5
Zinc oxide	5
Zinc sulphate	2

The chloral suppositories should not be prepared by heat when made from cocoa-butter alone ; simply beat up in a mortar and press into the mould. A good mass is, however, made by melting 2 parts of stearin and adding 1 part of chloral hydrate.

Extracts should be made soft with a drop of water, and some of the melted basis added, then incorporated with the rest with constant stirring.

Suppositoria Carnis

(syn. *Nutrient or Nutritive Suppositories*)

Dry beef peptone in powder . . .	ʒvj.
Cocoa-butter . . .	℥j.

Shred the cocoa-butter and melt it by the heat of a water-bath, triturate the peptone in a warm mortar with about half of the melted fat, return to the dish in portions, stirring all the time, and when the whole is thoroughly mixed pour into 1-dr. moulds (iced).

Suppositoria Glycerini, U.S.P.

Stearic acid .	5 grms., or 75 gr.
Sodium carbonate .	3 grms., or 45 gr.
Glycerine .	60 grms., or 15 dr.

Dissolve the sodium carbonate (not bicarbonate) in the glycerine warmed on a water-bath; then add the stearic acid, and heat carefully until it is dissolved and effervescence ceases. Pour into suitable moulds, and when the suppositories are cold and firm remove them, and wrap each one in tinfoil.

The last formula is intended for ten glycerine suppositories, but if they are not wanted of U S.P. size the mass may be poured into gr. xv., ʒss., or ʒj. moulds. The suppositories contain 90 per cent. of glycerine, and are excellent, but intensely hygroscopic

Agar-agar Suppositories have not come into favour in English-speaking countries, but they are appreciated in Germany, where Lewin and Eschbaum recommend them to be made from a powder consisting of a mixture of agar-agar 1 oz. and sodium bicarbonate 5 gr. One grain of this powder is sufficient to make a 15-gr. or 30-gr. suppository with water, the quantity of agar-agar varying according to the nature of the medicament. The following are good examples :—

A

Potassium iodide . .	ʒss.
Agar-agar powder . .	ʒss.
Distilled water . .	ʒxv.

Shake together in a strong bottle, then heat the contents in a water-bath until dissolved, and divide into fifteen or thirty suppositories.

B

Iodoform . . .	ʒiss.
Agar-agar powder . .	ʒss.
Distilled water . .	ʒxv.

Prepare in the same way as A, and divide into fifteen pessaries.

Glycerine suppositories with agar-agar are made by mixing 1 dr. of the powder with 5 dr. of water, then adding 25 fl. dr. of glycerine and heating the mixture on a water-bath until dissolved. Mould into suitable sized suppositories, which will contain 75 per cent. by weight, or 83 per cent. by volume, of glycerine. The bicarbonate of soda is added to agar-agar on account of the slight acidity of the latter.

SYRUPI—SYRUPS

The decimal part of the number denoting specific gravity of simple syrup multiplied by 26 gives very nearly the number of pounds of sugar to the gallon. For example, 1·330 B.P.—·330 × 26 = 8·580, or 8½ lbs. to gallon. The following figures show the product of certain weights of sugar and volumes of water :—

16 oz.	sugar to	12 oz.	water yield	22½	fl. oz., sp. gr.	1·273
16 oz.	,,	10 oz.	,,	20½	,,	1·298
16 oz.	,,	8 oz.	,,	18½	,,	1·330
14 oz.	,,	8 oz.	,,	17⅕	,,	1·311
12 oz.	,,	8 oz.	,,	16	,,	1·290
10 oz.	,,	8 oz.	,,	14½	,,	1·264
8 oz.	,,	8 oz.	,,	13¼	,,	1·231

The volume occupied by sugar in solution may be practically represented by 5 pints for 10 lbs. It is generally understood that syrups should not be poured hot into the stock-bottles and stoppered at once, because steam then rises, is condensed on the sides, trickles down, and forms a layer of water on the top. This, mixing by diffusion with the syrup, may form a weak saccharine solution on the surface, and thus favour fermentation.

It is as important in unofficial as in B.P. syrups to see that the product is exactly the same in volume and weight each time. If found not to be so the quantity should be adjusted.

Syrupus Acaciæ

(syn. *Syrupus Gummosus*)

Mucil. acaciæ . . .	℥iiss.
Syrupi	℥viiss.

M.

Syrupus Alkermis

Syrup coloured with liq. cocci.

Syrupus Acidi Citrici, U.S.P.

Acid. citric. . . .	ʒiiss.
Aq. destillat. . . .	ʒiiss.
Spt. limonis . . .	ʒiiss.
Syrupi ad . . .	℥xxxij.

Dissolve the citric acid in the water and mix with half the syrup, then add the spirit of lemon, and make up to the required volume.

Syrupus Acidi Hydriodici, B.P.C.

Iodide of potassium	152 gr.
Hypophosphite of potassium	12 gr.
Tartaric acid	140 gr.
Water	200 min.
Proof spirit	a sufficiency
Syrup to	20 oz.

Dissolve the potassium salts in the water, and the tartaric acid in 5 dr. of proof spirit. Mix the two solutions in a vial and shake. Place it in ice-water for half an hour, shaking occasionally. Then filter, and wash the vial and filter with proof spirit until the filtrate ceases to give a cloudiness when dropped into nitrate-of-silver solution. Evaporate in a tared capsule over a water-bath to 600 gr., and mix with sufficient syrup to make 1 pint.

Dose : ♏xx. to ʒj. in water.

This syrup contains 1 per cent. of hydriodic acid. The formula is a modification of the N.F. one, now official in the U.S.P.

Syrupus Allii, U.S.P.

Garlic, sliced and bruised	℥viij.
Dilute acetic acid	℥xij.

Macerate four days, and press. To the marc add 8 oz. of dilute acetic acid, and again press. Filter the mixed liquors upon

Sugar	lb. ij.

Dissolve, and add dilute acetic acid to make 40 oz. of syrup.

Syrupus Althææ

Marshmallow-root, sliced	ʒviss.
Rectified spirit	℥ss.
Water	℥vij.

Macerate two hours, strain, and in the liquor dissolve

Sugar	℥xij.

Then add

Glycerine	ʒxiv.
Distilled water to	℥xvj.

Mix.

Syr. Anisi pro Infantibus

A Soothing-syrup.

Ol. anisi	ʒss.
Ol. fœniculi	♏v.
Ol. amygdal. essent.	♏j.
Spt. rectificat.	℥iv.
Aq. destillat.	℥ij.
Syrupi ad	℥xvj.

Dissolve the oils in the spirit, add to the syrup and water mixed, allow to stand all night, and in the morning filter through a wetted filter sprinkled with fullers' earth, returning the filtrate until it goes through clear.

Dose : ʒss. to ʒj. in a tablespoonful of warm water, given in sips.

Syr. Anisi Simplex is made by infusing 1 oz. of bruised aniseed in 55 oz. of boiling water for two hours, filtering, and dissolving 66 oz. of sugar in the filtrate. Also made by dissolving ol. anisi ♏j. in syrup. ℥ij.

Syr. Apomorphinæ Hydrochlor. B.P.C.

Hydrochloride of apomorphine	gr. v.
Diluted hydrochloric acid	♏xv.
Rectified spirit	ʒvij.
Distilled water	ʒvij.
Syrup to	℥xx.

Mix the acid, spirit, and water, and dissolve the hydrochloride in the mixture ; add the syrup, and mix.

Dose : ʒss. to ʒj.

Syr. Bals. Peruviani, D.A.V.

Peruvian balsam	ʒj.
Hot water	℥x.

Shake well, and repeat the shaking occasionally during twenty-four hours, and filter 8 oz. In which dissolve

Sugar	℥xij.

without heat.

Syrupus Butyl-Chloral, B.P.C.

Butyl-chloral hydrate	ʒv. ℈j.
Syrup	℥xx.

Heat the syrup, and dissolve the butyl-chloral hydrate in it by shaking.

Dose: ʒj. to ℥ss. (=gr. ij. to gr. viij.).

Syr. Calcii Chlorhydrophosphatis

Precipitated phosphate of calcium	128 gr.
Hydrochloric acid,	
Water, each	a sufficient quantity
Spirit of lemon	140 min.
Syrup to	16 oz.

Triturate the phosphate of calcium with 1 oz. of water, and dissolve with the hydrochloric acid, avoiding an excess. Then add the spirit, filter, and wash the filter with a mixture of 1 oz. each of water and syrup. Lastly, add syrup to 16 oz.

Syrupus Calcii Hypophosphitis

I. B.P.C.

Calcii hypophos.	℈viij.
Sacchar. alb.	lb. j.
Acid. hypophos. (30 per cent.)	♏x.
Aq. destillatæ ad	℥xx.

Dissolve the hypophosphite in 9 oz. of water, filter, and dissolve the sugar in the filtrate, heating slightly; strain, and when cold add the acid, and water to make 1 pint.

Dose: ʒj. to ʒiv. (= gr. j. to gr. iv.).

II. N.F.

This contains twice as much calcium hypophosphite as the above, and 7 gr. of citric acid per 20 oz. instead of hypophosphorous acid.

Syrupus Calcii Iodidi, N.F.

Iodine	552 gr.
Iron wire, fine, bright, and finely cut	200 gr.
Precipitated chalk	250 gr.
Distilled water, a sufficient quantity	
Sugar	11 troy oz.
Syrup to	16 oz.

Mix the iron wire with 414 gr. of the iodine and 3 oz. of distilled water, and apply a gentle heat until the iodine is combined and the liquid has acquired a greenish colour. Filter through a small filter into a flask containing the remainder of the iodine, wash the filter with 1 oz. of distilled water, and heat the solution gently and carefully. Heat 4 oz. of distilled water in a capacious capsule to boiling, and add to it small alternate portions, first of the precipitated chalk, and then of the solution of iodide of iron, in small portions at a time, stirring briskly and waiting until the violence of the reaction moderates before adding a fresh portion. From time to time add a little distilled water to replace that lost by evaporation. When all the iron solution has been added, continue heating the mixture until it is quietly boiling, then filter it through a wetted filter, and wash the latter with enough distilled water to measure when cold 8 oz. In this dissolve the sugar by agitation, and make up with syrup to 16 oz. Strain if necessary.

Each fluid drachm contains about 5 gr. of iodide of calcium.

Syrupus Calcii Lactophosphatis

Chloride of calcium, B.P.	℥j. ʒiij.
Phosphate of soda	℥j. ʒvj.
Lactic acid, B.P.	℥iiss.
Orange-flower water	℥v.
Water	q.s.
Syrup	q.s.

Dissolve the chloride and the

phosphate, each separately in 2 pints of boiling water, mix the solutions collect the precipitate, wash thoroughly, and press. Rub it up with the acid and the orange-flower water, and when dissolved filter and add the solution to as much syrup as will make the whole measure 80 oz.

Dose: ʒj. to ʒij.

The U.S.P. syrup is made as follows:—Dissolve 366 gr. of precipitated chalk in 2 oz. of lactic acid and 2½ oz. of water, add 1 oz. 72 minims of phosphoric acid, and when the precipitate has dissolved add 4½ oz. of water; filter, to the filtrate add 6 dr. of orange-flower water, and dissolve in it 23½ oz. of sugar. The product should measure 32 oz.

Syr. Calcii et Ferri Lactophos., N.F.

Lactate of iron	gr. lxiv.
Citrate of potassium	gr. lxiv.
Water	℥j.
Syrup of lactophosphate of calcium (U.S.P.) to	℥xvj.

Dissolve the lactate of iron and citrate of potassium in the water with the aid of heat, and add the syrup to 16 oz.

May also be made by mixing equal parts of the two syrups. So also in the case of *Syr. Calcii et Sodii Hypophos.*

Syr. Calcii Phosphatis

Cretæ præcipitat.	ʒvj.
Acid. phosph. concent.	℥iij.
Aq. flor. aurantii	℥j.
Aq. destillat.	℥viij.
Sacch. alb.	℥xxiv.

Dilute the acid with the water, add the chalk gradually, stirring constantly. When effervescence ceases, filter, wash the filter with the orange-flower water, and in the filtrate dissolve the sugar without heat. Make up to 32 oz. with water, and strain.

Syr. Camphoræ Co. (Bristol Inf.)

I. The Old Formula

Tr. camph. co. (sine opio)	ʒij.
Oxymel. scillæ	ʒvj.
Syrupi opii	℥j.

M.

II. The New Formula

Acidi benzoic.	ʒiij.
Acid. acetic. glacial.	℥iij. ʒv. ♏xx.
Aceti scillæ	Oij.
Aceti ipecacuanhæ	Oij.
Ol. anisi	ʒij.
Camphoræ	ʒij.
Tr. opii	℥x. ʒv. ♏xx.
Sacchar. alb.	lb. xxviij.
Sacchar ust.	q.s.
Aq. ad	Cong. iv.

M.

Dose: ʒj. (= tr. opii ♏j.) occasionally.

The second formula for syr. camph. co. was designed by Mr. Kilner, dispenser at the Bristol Infirmary, to save spirit. In practice it is an economy of time to use at least 10 oz. of rectified spirit, in which to dissolve the anise oil, camphor, and benzoic acid. Mix the solution with the laudanum, and add to the cold syrup with constant stirring, then sufficient sacch.

ust. to give the syrup a tint the same as tr. camph. co. For Syr. Opii, *see* page 612.

Syr. Cascar. Sagrad., B.P.C.

Liquid extract of cascara sagrada . . .	℥iv.
Liquid extract of liquorice	℥iij.
Carminative tincture .	ʒij.
Syrup to . . .	Oj.

Mix.

Dose : ʒj. to ℥ss.

Cherry Pectoral Syrup

Morphin. sulphat. . .	gr. iij.
Vin. antimon. . .	ʒiij.
Vin. ipecac. . . .	ʒiij.
Acet. sanguinar. . .	ʒij.
Syr. pruni virg. . .	℥iij.

M.

Dcse : A teaspoonful every four hours.

This formula was given by the la Mr. J. C. Ayer to a friend.

Syr. Chondri Co., N.F.

Chondri crispi . . .	gr. xv.
Ext. ipecac. liq. . .	♏xv.
Ext. scillæ liq. . .	℥ss.
Ext. senegæ liq. . .	℥ss.
Tr. camph. co . .	℥j.
Cretæ gallicæ . . .	℥ss.
Sacchar. alb. . . .	℥xx.
Aq. destillat. ad . .	℥xxxij.

Macerate the Irish moss in 2 oz. of boiling water on a water-bath for fifteen minutes, strain through flannel, which wash with water to make 2 oz. of strained liquor. Mix the tincture, fluid extracts, 10 oz. of water, and the French chalk ; shake occasionally for half an hour, and filter, returning the filtrate until it comes through clear. To this add the sugar and the mucilage, dissolve without heat, strain, and wash the strainer with water to 32 oz.

Dose : ʒj. to ℥ss. for coughs.

Syr. Cinchonæ (Donovan)

Exhaust 8 oz. of cort. cinchon. flav. by double maceration with 48 oz. of proof spirit ; filter, and evaporate to 8 oz. ; reserve. Treat the marc by decoction with three successive 16 oz. of boiling water, and evaporate the filtered decoctions to 8 oz. Mix the liquors, and add

Anhydrous quinine . .	283 gr.
Oxalic acid . . .	55 gr.
Sugar . . .	21 troy oz.
Gum arabic . .	4 troy oz.

Heat to promote solution : allow to cool, make up to 32 oz. with syrup, and filter through flannel.

Dose : ʒj.

Syrup. Codeinæ

I. Ex-B.P.C.

Codeine, in powder . .	℈ij.
Proof spirit . . .	ʒx.
Distilled water . .	ʒx.

Dissolve, and add

Syrup to	℥xx.

Mix.

Dose : ʒss. to ʒij.

II

Codeine	℈j.
Dilute phosphoric acid .	ʒj.
Proof spirit . . .	℥j.

Dissolve, and add

Syrup to	℥xx.

Mix.

We prefer the second formula. It seems to soothe tickling cough better, and it is nicer to taste.

Curative or Digestive Syrup

Many preparations are now sold under these names, the composition being more or less akin to Mother Seigel's syrup. The following formula is one which was published in *The Chemist and Druggist* many years ago, and is difficult to beat:—

Pulv. boracis	℈j.
Pulv. gentianæ	℈j.
Pulv. capsici	gr. ij.
Ol. gaultheriæ	gtt. xiv.
Ol. sassafras	gtt. x.
Dec. aloes co. conc.	℥ij.
Succ. taraxaci	℥ss.
Spt. rectificat.	ʒij.
Theriac. ad	℥iv.

Rub the powders together, and upon them gradually pour the oils dissolved in the spirit, then add the decoction, triturating constantly, and next the juice. Transfer to a measure, add treacle to 4 oz., and mix.

Dose: A teaspoonful.

The only advisable alteration is to replace ½ oz. of the aloes decoction by as much ext. cascara sag. liq. The following is one of many American formulas:—

Ext. Culver's root	6½ lbs.
Ext. stillingia	6½ lbs.
Ext. poke	6½ lbs.
Ext. butternut	6½ lbs.
Ext. dandelion	6½ lbs.
Ext. prince's pine	5 lbs.
Ext. mandrake	4 lbs.
Ext. gentian	2 lbs.
Ext. colocynth	2 lbs.
Ext. black haw	10 lbs.
Aloes	9 lbs.
Powdered capsicum	1 lb.
Powdered sassafras	10 lbs.
Borate of soda	10 lbs.
Spirit of sea salt	12 lbs.
Golden syrup	30 gals.
Water to make	90 gals.

Mix.

Dose: For tonic and alterative effect take 15 to 20 drops three times a day immediately after eating. For cathartic effect, one to three teaspoonfuls at bedtime.

Syrupus Croci, P.L.

Saffron	ʒx.
Boiling water	Oj.

Macerate for twelve hours, strain, and in the liquor dissolve 3 lbs. of sugar.

This syrup is also made by dissolving 2 lbs. of sugar in a pint of 1-in-20 tincture (spt. 1, aq. 4).

Syrupus Ferri Bromidi, B.P.C.

Iron wire, free from oxide	℥ss.
Bromine	gr. 533
Sugar	℥xiv.
Distilled water	a sufficiency

Put the iron and 4 oz. of water in a pint flask standing in cold water, add the bromine in successive quantities, agitating the flask until the froth is white. Having dissolved the sugar in 6 oz. of water by heating, filter the bromide solution into the warm syrup and make up to 20 oz. by adding water.

Dose: ʒss. to ʒj. (ʒj. = $FeBr_2$ gr. ivss.).

The N.F. syrup contains 10 per cent. of $FeBr_2$. The B.P.C. formula appears to be a modification of one published in the 1887 edition of *The Chemists' and Druggists' Diary*.

Syrupus Ferri Hypophosphitis, B.P.C.

Strong solution of hypophosphite of iron	℥iv.
Syrup	℥xvj.

Mix.

Dose: ʒss. to ʒij.

The N.F. syrup contains potassium citrate, ferric hypophosphite (ʒj. = gr. j.), orange-flower water, and syrup.

Syr. Ferri Iodidi c̄ Quinina

Quininæ sulphat.	gr. x.
Acid. hypophosph.	q.s.
Potassii iodidi	gr. iv.
Syrup. ad	℥iv.

Mix the quinine with a drachm of water, and add the acid drop by drop to dissolve, then add the syrup to 4 oz. and the iodide dissolved in 10 to 20 drops of water. Shake well, and add

Syr. ferri iodidi	℥iv.

Mix, and if cloudy add hypophosphorous acid drop by drop to clear the syrup.

Syrupus Ferri Lactophosphatis

Sulphate of iron	℥j.
Phosphate of soda	℥j. ℈ij.

Dissolve each salt in a pint of hot water, mix, and add carbonate of soda until effervescence ceases. Collect the precipitate on a strainer, wash it well, drain, and dissolve it in the following mixture :—

Concentrated lactic acid	℥iss.
Phosphoric acid, s.g. 1·500	℥ij.
Water	℥iv.
Orange-flower water	℥ij.

Filter, and add sufficient thick syrup to make 60 oz.

Syr. Ferri Limonad.

(Goodell)

Tr. ferri chloridi, U.S.P.	℥ss.
Acid. phosphoric. dil.	ʒvj.
Spt. limonis, U.S.P.	ʒij.
Syrup. ad	℥vj.

M.

Dose : A dessertspoonful after meals.

Syr. Ferro-mangani Saccharati

Syr. ferri oxidati sacch.	℥viij.
Syr. mangani oxid. sacch.	℥ij.
Spt. vini gallici	ʒx.
Spt. rectificat.	ʒx.
Tr. aurantii	ʒj.
Tr. aromat.	♏xx.
Tr. cinnamomi	♏xv.
Essent. vanillæ	♏xv.
Æther. acetici	♏v.
Syrupi ad	℥xxxvj.

M.

Syr. Ferri Oxidati Saccharati

Solution of ferric chloride (s.g. 1·480)	℥x.
Solution of caustic soda, a sufficiency	

Mix the iron solution with a gallon of water and add solution of soda to precipitate ferric hydroxide. Wash the precipitate well with water, then mix the magma with

Sugar	℥x.
Solution of soda (s.g. 1·333)	℥ss.

Heat on a water-bath until clear, and add water to make the liquor weigh 20 oz.

A mixture of 1 volume of this preparation with 3 volumes of syrup is practically syr. ferri oxidat. sol., P.G., and syr. ferri sacch. sol., N.F.

Syr. Ferri Peptonati

Peptonate of iron (Dieterich's)	ʒiv.
Distilled water	℥iij.

Heat and add to

Syrup (by weight)	℥xxix.

Evaporate on a water-bath to 30 oz. by weight, and add the following mixture :—

Brandy	ʒxiv.
Aromatic tincture	♏xv.
Tincture of cinnamon	♏xv.
Tincture of ginger	♏xv.
Essence of vanilla	♏xv.
Acetic ether	♏viij.

Mix.

Syr. Ferri et Quininæ Hydrobromatum, B.P.C.

(syn. *Syrupus Ferri Bromidi cum Quinina*)

Acid hydrobromate of quinine . . .	℈viij.
Diluted hydrobromic acid	ʒiij.
Distilled water . .	℥j.

Mix the acid with the water, and dissolve the quinine in the mixture; then add

Syrup of bromide of iron to	℥xx.

Mix.

Dose: ½ to 1 fl. dr.

Syrupus Ferri, Quininæ, et Strychninæ Hydrobromatum, B.P.C.

(syn. *Syrupus Ferri Bromidi cum Quinina et Strychnina*)

Add 2½ gr. of powdered strychnine to the acid solution in the last formula.

Dose: ½ to 1 fl. dr.

Syr. Ferri Quininæ et Strychninæ Phosphatis

(syn. *Easton's Syrup*, *Syr. Trium Phosphatum*)

I. The Original

Sulphate of iron .	ʒv.
Phosphate of soda .	ʒvj.
Sulphate of quinine .	ʒiij. gr. xij.
Strychnine . .	gr. vj.
Diluted phosphoric acid . . .	℥xiv.
Sugar . . .	℥xiv. (troy)
Distilled water, diluted sulphuric acid, and solution of ammonia, of each .	a sufficiency

Dissolve the sulphate of iron in 1 oz. of boiling water and the phosphate of soda in 2 oz., mix the solutions, collect the precipitate, and wash it until the washings are tasteless. Dissolve the quinine sulphate in 2 oz. of water with a sufficiency of the sulphuric acid; precipitate with ammonia, collect and wash carefully. Dissolve this precipitate, the phosphate of iron, and strychnine in the phosphoric acid, then add the sugar and dissolve the whole, and mix without heat.

The product should measure about 24 oz., and to get this the iron precipitate should be well drained.

II. Ex-B.P.C.

Strychnine (in powder) . . .	gr. v.
Concentrated phosphoric acid (sp. gr. 1·5) . . .	♏lxxv.
Distilled water . .	♏ccxxv.

Dissolve, and add

Phosphate of quinine	ʒij.

Dissolve by the aid of a gentle heat, and add

Syrup of phosphate of iron to . . .	℥xx.

Mix thoroughly.

III. U.S.P.

Pyrophosphate of iron	ʒiv. gr. xlvj.
Sulphate of quinine .	ʒvij. gr. x.
Strychnine . .	gr. iij.
Glycerine . .	℥iij. ʒij.
Phosphoric acid (sp. gr. 1·057) . .	℥iss. ♏xl.
Distilled water . .	ʒxiv.
Syrup to . .	℥xxxij.

Dissolve the pyrophosphate in the water by gentle heating. Then add the quinine sulphate, phosphoric acid, and strychnine, and stir until dissolved; filter into the glycerine, mix, and add syrup to 32 oz.

According to Aitkin's 'Science and Practice of Medicine,' the original Easton's syrup contains 1 gr. of phosphate of iron, 1 gr. of phosphate of quinine, and $\frac{1}{32}$ gr. of strychnine in each fluid drachm. The B.P.C. one contains $\frac{3}{4}$ gr. of phosphate of quinine only, the quantity having been reduced because with 1 gr. per dr. the syrup becomes almost solid in the winter time. This is really due to the excessive acidity of the syr. ferri phosph., B.P. On this point see Squire's 'Companion,' p. 261, and *C. & D.*, xliii. p. 373 and p. 422. We prefer the first formula, increasing the sodium phosphate to ʒvij., and neutralising with sodium bicarbonate, as in making syr. ferri lactophos. The ferrous-phosphate precipitate should be thoroughly drained, and instead of using ac. phos. dil., B.P., use ac. phosph. (sp. gr. 1·500) ℥ij. and a sufficiency of water to make 7 oz. of the solution of phosphates. Add this to a syrup made by dissolving 1 lb. of sugar in 7 oz. of water. The product measures 24 oz. The U.S.P. syrup contains more iron and quinine than the original, and about $\frac{1}{85}$ gr. of strychnine in the teaspoonful. It is not so good a preparation, being rather liable to change, but it is readily prepared.

Syrup of Figs

Chop up 2 oz. of figs and boil in a pint of water until nearly half of the water is evaporated. Strain off 10 oz. of the decoction, and in it dissolve 1 lb. of sugar. This is to be used in the subjoined compound :—

Ext. sennæ dulc. . .	℥iiss.
Ext. cascar. sag. liq. misc. . . .	℥j.
Tr. cinnamomi . .	℥ss.
Spt. menthæ pip. . .	ʒiss.
Spt. caryophylli (1 in 50)	ʒiss.
Spt. myristicæ . .	ʒiss.
Ol. gaultheriæ . .	gtt. iij.
Syr. ficorum ad . .	℥xvj.

Dissolve the oil in the mixed spirits before adding to the tincture and extracts.

Dose: A teaspoonful or more at bedtime.

Syrupus Ferri Pyrophosphatis

Pyrophosphate of iron .	ʒiiss.
Distilled water . .	℥j.
Syrup of orange-flowers .	℥iiss.
Syrup to . . .	℥xxiv.

Dissolve the pyrophosphate in the water by a gentle heat, and add the syrups.

The Codex formula is the same without the flavouring.

Syrup of Fox's Lungs

A very old preparation, no longer made from fox's lungs. Syrupus rhœados is generally given nowadays, but there are diversions from this rule. Thus, in some places syrup of tolu is given, in others syrup of squills, and even simple syrup coloured with liquorice. The syrup is used for the treatment of coughs, generally along with paregoric elixir. In Norwich the following mixture is given:—

Liquorice . . .	℥iiss.

Dissolve in

Water	Oiiiss.

Add

Sugar	lb. viij.

Dissolve by heating, strain through flannel, and add

Ipecacuanha wine . .	℥iv.

Mix.

Syrupus Glycyrrhizæ
Improved

Ammonium glycyrrhizinate	ʒj.
Rectified spirit . .	ʒiss.
Water	ʒviss.

Dissolve, and add to

Syrup	℥iv.

Mix.

Ammonium glycyrrhizinate may be made by treating extract of liquorice, dissolved in water, with dilute sulphuric acid, collecting the precipitated glycyrrhizin and washing with water to free it from sulphuric acid, then dissolving in the smallest possible quantity of ammonia solution and evaporating to dryness.

Syrupus Gummi Rubri

A solution of sugar 12 oz. in liquid extract 20 oz. [Squire.]

Syr. Hydrarg. Biniodidi
(Gibert's Syrup)

Hydrarg. iodidi rub. .	gr. j.
Potassii iodidi . . .	℈iiss.
Aq. destillat. . . .	ʒj.

Solve et adde

Syrup. ad . . .	℥iv.

M.

Dose: A teaspoonful for adults.

Syrupus Hyoscyami

Ext. hyoscyami . .	ʒss.
Aq. bullientis . . .	℥iv.

Rub down in a mortar, filter, and to the filtrate add

Acid. salicylic. . .	gr. iv.
Spt. rectificat. . .	ʒj.
Sacch. alb. . .	℥viij.

The acid to be dissolved in the spirit first. Make a syrup.

Syrup. Hypophosphit. Comp.
I. B.P.C.

Strychnine . . .	gr. j.
Hypophosphorous acid (30 per cent.) . . .	ʒij.

Dissolve, and add

Quinine hypophosphite .	℈j.
Hypophosphite of calcium	℈iv.
Hypophos. of manganese .	℈ij.
Hypophos. of potassium .	℈ij.

Dissolve, filter, and add

Strong solution of hypophosphite of iron .	℥j.
Sugar	℥xiv.

Dissolve, and add

Chloroform ♏xx. in S.V.R.	♏xl.
Distilled water to . .	℥xx.

Mix.

II. Similar to N.F.

Hypophosphite of calcium	ʒvj.
Hypophosphite of sodium	ʒiv.
Hypophosphite of potassium	ʒiv.
Sulphate of manganese .	℈iiss.
Sulphate of iron . .	℈viss.
Quinine (alkaloid) . .	ʒij.
Tincture of nux vomica .	ʒv.
Hypophosphorous acid (30 per cent.) .	a sufficiency
Glycerine . . .	℥iv.
Water to . . .	℥xx.

Dissolve the sulphates of iron and manganese in 2 oz. of hot water, acidulated with 10 drops of the acid, and filter; then add 2½ dr. of hypophosphite of calcium, previously dissolved in 2 oz. of hot water, bring to the boil, filter the solution, wash the precipitate with water to 5 oz., and add to the glycerine. Next dissolve the quinine in 1 oz. of water with sufficient hypophosphorous acid, add this to the glycerine solution. Separately dissolve the remainder of the hypophosphites in 8 oz. of water, acidulating slightly with hypophosphorous acid, filter if necessary, and add to the glycerine solution. Then add the tincture, and water to 20 oz.

To make the syrup, dissolve 14 oz. of sugar in a mixture of 4 oz. of the above liquor and 4 oz. of water.

III. Tscheppe's Formula

Pyrophosphate of iron .	gr. xv.
Hypophosphite of sodium	gr. xlv.
Sulphate of quinine .	gr. v.
Strychnine (previously dissolved by itself) . .	gr. ss.
Hypophosphite or sulphate of manganese .	gr. xv.
Thick syrup to .	℥xvj. (by weight)

Dissolve the solids, except the strychnine, in 1 oz. of distilled water with 2 or 3 drops of acid. sulph. dil. Instead of pure strychnine use liq. strych. hydrochlor., B.P., ʒj., add to the solution, then mix with 11 fl. oz. of syrup, which gives the required weight.

The formulas which have been published to imitate Fellows's syrup of hypophosphites are exceedingly numerous and varied in character. Of the foregoing, the third gives a preparation nearest in appearance to the original, and furthest from it in therapeutic activity. This formula is interesting as being the one recommended by several English pharmaceutical authorities, with variations upon the text originally published. The B.P.C. syrup has been improved. The second formula gives an opaque syrup, which, not being a preparation of strychnine, does not require to be signed for in the poisons book when sold in the United Kingdom.

Syrupus Iodotannicus

I. Guillermond's

Iodine	ʒss.
Rectified spirit . .	ʒj.

Dissolve, and add to a solution of

Extract of rhatany . .	ʒij.
Distilled water . .	℥xvj.

Filter after an hour, evaporate to 11 oz., and in this warm liquid dissolve 20 oz. of granulated sugar.

Dose: A teaspoonful.

II. Gay's Modification

Iodine	gr. xij.
Rectified spirit . .	℥ss.
Tannin	gr. xij.
Syrup to . . .	Oj.

Dissolve the iodine in the spirit by trituration, add the tannin and the syrup. Heat the mixture to boiling (until it ceases to colour starch mucilage), then filter.

Syr. Ipecacuanhæ Aceticus, B.P.C.

A solution of sugar 2¼ lbs. in 20 oz. of acet. ipecacuanhæ.

Syr. Ipecac. et Opii, N.F.

Dover's Powder Syrup

Tr. ipecac et opii, U.S.P.	ʒxss. ♏x.
Aq. cinnamomi ad	℥viij.

Mix, filter, and dissolve in the filtrate

Sacchari albi	℥xij.

ʒj. = pulv. ipecac. co. gr. v.

Jackson's Pectoral Syrup

Sassafras pith	ʒss.
Gum arabic	ʒv.
Water	℥viss.

Allow to stand for twelve hours, stirring occasionally, then add

Sugar	℥x.

Dissolve without heat, then add

Hydrochlorate of morphine	gr. iij.

Mix.

Dose: ʒj. to ʒij. several times daily.

This is the original of syr. morphin. co., N.F.

Kermes Syrup

Lemon syrup flavoured slightly with cinnamon and rose, and coloured with cochineal, now passes for this.

Syrup of Lemon

Ol. limonis	ʒvj.
Spt. rectificat.	℥vj.

Dissolve and add to

Mag. carb. levis	ʒij.
Aq.	℥iij.

Filter, and add

Succ. limonis conc.	℥xvj.
Syrup. ad	Cong. j.

M.

Syrupus Lobeliæ

Sacchari	lb. ij.
Acet. lobeliæ	℥xvj.

Dissolve by the aid of heat not exceeding 180° F., and continued for three hours; skim, and strain.

A mixture of equal parts of the vinegar and simple syrup is sometimes given.

Syr. Mangani Oxidat. Saccharat.

Potass. permangan.	ʒiiss.
Aq. destillat.	℥xvj.

Dissolve and add

Syrupi	℥ij.

Set aside for a few hours to allow a brown precipitate to settle, then boil the mixture, and collect the manganese hydroxide on a filter. Wash the magma once with a little distilled water, and mix with

Sacchari albi	℥iij.
Liquor. sodæ (s.g. 1·333)	ʒj.

Heat on a water-bath until clear, and add water to make the weight 6 oz.

Syrupus Mannæ, P.G.

Manna	℥j.
Sugar	℥v.
Water	℥iv.

Dissolve the manna in 4 oz. of water, filter, and in the filtrate dissolve the sugar. Restore the weight to 10 oz. if necessary by adding water.

Syrupus Marrubii Comp.

Syr. pruni virg.	℥j.
Syr. ipecacuanhæ	℥j.
Tr. camph. co.	℥iv.
Ext. marrubii liq.	℥ij.
Syr. tolutani	℥v.

Mix, add a little fullers' earth, and allow to settle. Decant the clear syrup, and filter the rest.

Dose: ʒj. thrice daily for cough.

Syrupus Opii Bristoliensis

Opii	℥iv.
Sacchar. crudi . .	cwt. j.
Aq. ad . . .	Cong. xij.

Infuse the opium in a gallon of boiling water for an hour or so, strain, add to the sugar with more water to make 12 gallons of syrup.

Syrupus Phosphatum Comp.

(*Parrish's Chemical Food*)

I. The Original Formula

Protosulphate of iron .	ʒx.
Phosphate of soda . .	ʒxij.
Phosphate of lime . .	ʒxij.
Glacial phosphoric acid .	ʒxx.
Carbonate of soda . .	℈ij.
Carbonate of potash .	ʒj.
Muriatic acid . . .	of each q.s.
Solution of ammonia .	of each q.s.
Powdered cochineal .	ʒij.
Water sufficient to make .	℥xx.
Sugar . . .	lb. iij. (troy)
Oil of orange . . .	♏x.

Dissolve the sulphate of iron in 2 oz. of boiling water, and the phosphate of soda in 4 oz. of boiling water. Mix the solutions, and wash the precipitated phosphate of iron till the washings are tasteless. Dissolve the phosphate of lime in 4 oz. of boiling water with sufficient muriatic acid to make a clear solution, precipitate it with the solution of ammonia, and wash the precipitate. To the freshly-precipitated phosphates, as thus prepared, add the phosphoric acid previously dissolved in the water. When clear add the carbonates of soda and potash, and afterwards sufficient muriatic acid to dissolve the precipitate. Now add the cochineal mixed with the sugar, apply heat, and when the syrup is formed strain and flavour it. Each teaspoonful contains about 1 gr. of phosphate of iron and 2½ gr. of phosphate of lime, with smaller proportions of the alkaline phosphates, all in perfect solution.

II

Ferri sulphatis . .	℥v.
Sodii phosphatis . .	℥vj.
Calcii chlorid. crystal. .	℥viij.
Sodii phosphatis . .	℥viij.
Potassii carbonatis . .	ʒij.
Sodii carbonatis . .	ʒij.
Liquor cocci . .	q.s. to colour
Acid. phosphoric. (s.g. 1·500) . . .	℥xv.
Sacchari granulat. .	lb. xxxij.
Aquæ flor. aurantii . .	Oij.
Aquæ . . .	Oxij. ʒiv.

Form ferrous phosphate, *i.e.*, dissolve the ferrous sulphate and sodium phosphate ℥vj. separately in boiling water, mix together, neutralise free acid with sodium carbonate, strain through twill, wash and squeeze the precipitate strongly. Treat the calcium chloride with sodium phosphate ℥viij. in the same manner, omitting the sodium carbonate. Transfer the precipitates to a mortar, pour upon them the phosphoric acid, and dissolve by stirring; now add the sodium and potassium carbonates and filter. Have a syrup made with the sugar and water, add to it the filtered solution, the orange-flower water, and sufficient cochineal solution to give the desired colour.

III. B.P.C.

Iron wire, free from oxide	gr. xxxviiss.
Phosphoric acid, sp. gr. 1·500	℥j.
Distilled water . .	℥v.

Put these into a glass flask, so that the liquid completely covers the iron wire, plug the neck with cotton wool, and heat gently till dissolved. Add this solution to the following when the latter has cooled :—

Precipitated chalk . .	ʒij.
Phosphoric acid, sp. gr. 1·500	ʒiv.
Distilled water . .	℥ij.

Mix and add

Bicarbonate of potassium .	gr. ix.
Phosphate of sodium .	gr. ix.

Filter and set aside. Then take of

Cochineal . . .	ʒss.
Distilled water . .	℥viiss.

Boil for fifteen minutes and filter, pouring over the filter enough distilled water to produce 7 oz. of filtrate. To this add

Refined sugar . .	℥xiv.

Heat till dissolved, and strain. When cold, add the filtrate set aside, and distilled water to make 20 oz.

Mix.

ʒj. = about phosphate of iron $\frac{1}{2}$ gr., and phosphate of calcium $\frac{1}{5}$ gr.

The first of the foregoing formulas for syr. phos. co. is that contributed by the late Mr. Edward Parrish, of Philadelphia, to the *American Journal of Pharmacy*, xxiv., 573. Syrup made according to it deposits heavily. The second is a modification strictly on Parrish's lines, but it produces a syrup rather less than half the strength. The formula, however, works well, and the resulting syrup is excellent. The B.P.C. formula is also satisfactory, and the syrup is about Parrish's strength, but it is somewhat acid, and would be better with 13 oz. instead of 14 oz. of sugar. Syr. phosph. co. sometimes gives trouble by crystallising. This is due to excess of sugar and acid ; the latter tends to cause inversion of the sugar, and dextrose is precipitated. Precipitation of lime invariably occurs in syrups made the original strength, and occasionally a trace of iron is precipitated as ferric oxyphosphate. This can be avoided by using such a formula as No. II., which gives the desired pharmaceutical and therapeutical results.

Syrupus Picis, U.S.P.

Tar	℥iiss.
White sand . . .	℥iij.
Water	℥vj.

Mix the sand and the tar in a mortar and pour on the water. Stir, and repeat the stirring occasionally during twelve hours ; reject the water. Then pour upon the tar and sand

Boiling water . . .	℥xiij.

Stir for fifteen minutes and add

Glycerine . . .	℥iij. ʒij.

Set aside for twenty-four hours,

stirring occasionally; then filter. Dissolve in the filtrate

Sugar . . . . ℥xxviss.

and bring up to 32 oz. with water if necessary.

Dose: ʒij. or more.

Syrupus Pini Strobi Co., N.F.

(syn. *Syrup of White Pine, White Pine Expectorant*)

White-pine bark . .	ʒxix.
Wild-cherry bark . .	ʒxiv.
Spikenard-root . .	ʒiiss.
Balm of Gilead buds .	ʒiiss.
Blood-root . . .	ʒij.
Sassafras-bark . .	℈v. gr. v.
Morphine sulphate . .	gr. viiss.
Chloroform . . .	ʒiss.
Sugar	℥xxiij.
Rectified spirit and water, of each .	a sufficiency

Reduce the first six ingredients to No. 40 powder, and make 16 oz. of tincture by maceration and percolation with a menstruum consisting of 1 volume of spirit and 3 volumes of water. In this tincture dissolve the sugar and the morphine sulphate, add the chloroform and sufficient syrup to make 32 oz. of syrup.

Syrupus Pruni Virginianæ, B.P.C.

Wild-cherry bark (in No. 20 powder) . . .	℥iij.
Refined sugar (in coarse powder) . . .	℥xv.
Glycerine . . .	ʒx.
Distilled water .	a sufficiency

Moisten the powder with distilled water, and macerate for twenty-four hours in a closed vessel; then pack in a percolator, and percolate 9 oz. Dissolve the sugar in the liquid by agitation, without heat, add the glycerine, strain, and, if necessary, wash the strainer with distilled water to 20 oz.

Dose: ʒss. to ʒij.

Syr. Quininæ Hydrobromidi

Quininæ hydrobrom. .	℈iv.
Acid. hydrobrom. .	ʒiiss. ♏x.
Aquæ destillatæ . .	℥j.
Syrupi ad . . .	℥x.

Mix the quinine with the water, and add the acid. Filter, if necessary, and add the syrup.

Syr. Quininæ Hydriodidi

Quinin. hydriodidi acid. .	℈iv.
Syrupi	℥x.

Triturate the acid hydriodide of quinine in a mortar, and add the syrup gradually, stirring constantly to dissolve the salt.

Other salts of quinine may be made into syrups similarly, dissolving the salt, where practicable, by the aid of a dilute acid.

Syrupus Sarsæ Comp.

I

Dec. sarsæ co. conc. .	℥iiss.
Syrupi	℥xviiss.

M.

II

Rad. sarsæ cont. . .	℥xij.
Lig. guaiac. rasp. . .	℥viij.
Lig. sassaf. concis. . .	℥viij.
Cort. cinchon. cont. .	℥iv.
Rad. chinæ concis. . .	℥viij.
Fruct. anisi cont. . .	℥ij.
Aquæ fervid . . .	Ovj.

Digest three hours, filter, evaporate to 40 oz. and make into a syrup with

Sacch. alb. . . . lb. iv.

Syrupus Scammonii

Pulv. scammonii virg. .	℥iv.
Pulv. jalapæ . . .	℥iv.
Rad. zingib. contus. .	℥j.
Spt. rectificat. . .	℥xxiv.

Percolate and displace with water.

Sennæ	℥viij.
Aq. tepid. . . .	℥xx.

Infuse for twelve hours, strain,

and make a syrup with 1½ lb. sugar, to which add the tincture and make up to 40 oz. with ginger syrup.

Syrupus Sodii Hypophosphitis, B.P.C.

Dissolve sod. hypophos. ℈viij. in distilled water ʒiij., filter; wash the filter with distilled water ʒj., and add syrup to produce 1 pint.

Dose: ʒj. to ℥ss.

Syrupus Sodii Santonici

(Dr. George Harley's)

Pulv. santonini . .	gr. xij.
Sodii bicarbonatis . .	℈j.
Sacch. alb. . . .	ʒxij.
Aq. dest. . . .	q.s.

Dissolve the bicarbonate in 2 oz. of boiling water, add the santonin 2 gr. at a time until dissolved, filter, evaporate to ʒvj., and dissolve the sugar in the solution.

Dose: ℥ss. to ℥j. for an adult.

Syrupus Sulphatum (Symonds)

Beberinæ sulphatis . .	℈ij.
Quininæ sulphatis . .	℈v.
Ferri sulphatis . .	℈v.
Potassii sulphatis . .	ʒv. ℈j.
Sodii sulphatis . .	ʒv. ℈j.
Acid. sulph. dil. .	ʒiij. ♏xx.
Glycerini . . .	℥j.
Aq. destillatæ . . .	℥iv.

Dissolve, filter, and add

Chloroformi . . .	♏x.
Spt. rectificat. . .	♏xx.
Syrupi ad . . .	℥xx.

M.

Dose: ℥ss.

Teething-syrups

I. Carminative

Tr. anthem. flor. . .	℥j.
Tr. card. co. . . .	℥ss.
Glycerin. . . .	℥iss.
Syrup.	℥vij.

M.

Dose: ʒss. to ʒj.

II

Sodii bromidi . . .	ʒj.
Ext. apii liquid. . .	ʒj.
Ess. anisi . . .	ʒj.
Syrup. ad . . .	℥viij.

M.

Dose: ʒss. to ʒj. every hour or two.

Syrupus Violæ

Fresh violets (blue pansies)	℥xvj.
Carbonate of potash .	gr. v.
Boiling water . . .	Oiss.
Sugar	lb. viiss.

Infuse the flowers in the water, in which the carbonate of potash has been dissolved, for twenty-four hours, strain without pressing, and dissolve the sugar in the liquor.

Worm-syrup

Santonin. . . .	℈j.
Liq. sennæ dulc. . .	ʒj.
Glycerini . . .	ʒss.
Syr. anisi . . .	℥iiiss.

Rub the santonin to powder, and mix with the glycerine; add the other ingredients, and mix.

Doses: Under 1 year, ʒss.; between 1 and 2 years, ʒj.; between 2 and 4, ʒiss.; between 4 and 6, ʒij.; and for older children, ʒiij. To be taken the first thing in the morning, fasting, after the bottle has been shaken.

TABELLÆ—TABLETS

Several forms of medication go under the name tabellæ, or tablets. For convenience they may be divided into three classes—viz., (1) tablets made by compression; (2) tablets made by moulding without compression, commonly called tablet-triturates; and (3) tablets made from a chocolate basis, as provided by the 'British Pharmacopœia.' The manufacture of compressed tablets has become a special branch of the art of pharmacy, because its successful pursuit requires much experience and judgment, together with a knowledge of the machines used, which sometimes sulk as a child and have to be coaxed, or otherwise, as experience teaches. Machines are of two kinds, working by (1) percussion and (2) pressure. The latter are better. It is important that the dies be sharp and smooth, for upon these factors the finish of the tablet largely depends. Chemical salts which are to be compressed should be in the granular form; ordinary powders are quite unsuitable. English chemical manufacturers now supply the proper form of material. The same remark applies to all powders—they must be granular. On the retail scale a considerable amount of 'faking' is necessary in making tablets of pure substances. Thus, an excipient must be added to make the powders adhere, and the dry powder must be sprayed with heavy petroleum oil, or a solution of vaseline in ether (gr. x. to ℥j.) immediately before compression. The latter treatment prevents the formation of a clear solution of the tablets in distilled water. The subjoined formulas by Mr. Frank Edel[1] will show the requisite treatment.

For Doses of a Few Grains

Example

Phenacetin . . .	500 gr.
Powdered sugar . .	50 gr.

Reduce the phenacetin to fine powder, and mix. Moisten with a few drops of syrup and a sufficiency of water. Pass through a No. 20 sieve. Dry, and again sift. Spray the powder with 20 to 30 drops of vaseline solution and make 100 tablets.

In the same manner the following are made:—

Acetanilide
Antipyrin
Bismuth salts
Chloralamide
Salicin
Salol
Sulphonal

Small Tablets of Fractional Grain Doses

Example

Calcium sulphide . .	gr. xxv.
Sugar of milk . .	ʒij. gr. v.

Mix thoroughly, add 4 or 5 drops

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[1] *How to Make Tablets.* The Spatula Publishing Company, 8 Oliver Street, Boston, U.S.A. 25 cents.

of simple syrup, then moisten with water, and pass through a No. 20 sieve. Dry. Lubricate the granular powder by spraying 10 drops of vaseline solution over it, and make into 100 tablets.

In the same manner may be made tablets of the following remedies, adjusting the weight of sugar of milk taken to the dose of the medicine. Thus, if aloin tablets gr. j. are to be made, only 50 gr. of sugar of milk is required for the 100 tablets.

Aloin
Arsenious acid
Caffeine
Codeine
Digitalin
Ext. nucis vomicæ
Mercurous chloride
Mercurous iodide
Morphine hydrochlorate
Podophyllin
Strychnine

These are simple forms. Many substances require no addition, this being especially true of the salts obtainable in a granular form ; but even in these cases the addition of 2 to 5 gr. of finely powdered French chalk to the powder for a hundred tablets is an advantage, the mixture being well sifted. Disintegrating tablets are obtained by adding 2 to 4 gr. of powdered arrowroot to each ounce of material. On the other hand, tablets required to dissolve slowly should have 5 per cent. of powdered acacia mixed with the powdered substance before damping and granulating.

Cocoa-powder tablets are made very easily. Mr. Stewart Hardwick says that cocoa-powder greatly facilitates compression, the trace of oil in the cocoa preventing the tablets sticking in the mould. The formula is—

Medicament as ordered.	
Cocoa-powder	½ gr.
Sugar of milk to	2 gr.

No difficulty is experienced in making such a powder into tablets.

Tinctures of aconite, belladonna, digitalis, strophanthus, nux vomica, &c., may be mixed with the sugar of milk, and evaporated over a water-bath, the cocoa-powder added, and the mixture compressed in the usual way. Tablets of extract of cascara sagrada and combinations of cascara sagrada and podophyllin are easily made. The dried and powdered extract should be used, half its weight of liquorice-powder added, and a trace of heavy paraffin oil sprayed over the powder.

Hypodermic tablets are made with a basis of granulated sodium sulphate or sugar of milk, the former being the better. Sodium acetate is used for diluting morphine acetate. On the retail scale, the powder for each tablet should be weighed. Self-feeding tablet-machines are obtainable, but cost 40*l.* or more.

Tablet-triturates, or moulded tablets, are made with sugar of milk and a mould consisting of a flat plate of vulcanite having holes bored into it, which fits upon another vulcanite plate upon which are as many projections as holes, and these projections push out the tablets from the holes. Each tablet generally weighs a fraction over a grain, but the weight of the tablets formed by the mould is determined by making powdered sugar of milk into a paste with proof spirit. The paste should have such a consistency that it will just spread with a spatula. The mould is filled with the paste, the tablets pressed out, dried, and their weight determined. From this the weight of sugar of milk required for a specified number of tablets can be calculated. Some of the sugar of milk must be omitted for the medicament put in, and how much is a matter of experiment. It is obvious that powders vary in density. Thus a grain of calomel occupies less space than a grain of milk sugar, so that if in making $\frac{1}{10}$ gr. calomel triturates, $\frac{1}{10}$ gr. sugar of milk is omitted, the resulting triturates will really be slightly stronger of calomel. Tablet-triturates are generally employed for homœopathic doses. Soluble substances are added in solution, the liquid to damp the mass being proof spirit (or other stronger or weaker alcohol), chloroform, or any easily vaporisable liquid which will bind the ingredients without overcoming their disintegrating character. Those who wish further particulars regarding the manufacture of tablet-triturates should consult Coblentz's 'Handbook of Pharmacy.'

The 'British Pharmacopœia' recognises one tabella—viz., tab. nitroglycerini—but gives no formula for making it, merely stating that the tablets are of chocolate, each weighing $2\frac{1}{2}$ gr., and containing $\frac{1}{100}$ gr. of pure nitroglycerine. The following are good formulas.

Tabellæ Nitroglycerini

Fry's cocoa powder (without oil)	3 oz.
Powdered sugar	6 oz.
Oil of theobroma	4½ oz.
Nitroglycerine	24 gr.

Mix the cocoa powder with the sugar, pass through a fine sieve. Liquefy the oil of theobroma on a water-bath, and dissolve the nitroglycerine in it. Then add the powders, stirring the whole well together, and when mixed cut into 2½-gr. pills on the pill-machine and mould into tablets.

Tabellæ Acidi Arseniosi

Trituration of arsenic (1 in 100)	48 gr.
Cocoa powder	70 gr.
Tragacanth-powder	24 gr.
Saccharin	1 gr.
Rectified spirit	30 minims
Essence of vanilla	24 minims
Distilled water	30 minims

Mix in the above order, and divide into 100 tablets.

According to the 'Physicians' Pharmacopœia,' the cocoa and other ingredients, including the medicine to be administered, are rubbed together in a mortar, massed in the same way as a pill-mass with the liquid excipient, and cut into pills on a pill-machine. Each pill is then taken, dusted with a powder of equal parts powdered sugar and arrowroot to prevent sticking, and placed in a tube of brass or wood standing vertically on a tile, an accurately-fitting piston of wood giving a round form to the lozenge on being forced down the tube on the top of the pill. By judicious manipulation of the pill-cutter quite presentable tablets may be made without the mould.

TINCTURÆ—TINCTURES

The following are the two processes by which tinctures are generally prepared. These methods are referred to under the formulas as A and B.

A. *Maceration.*—The comminuted drugs are placed in a bottle with the whole of the menstruum, the bottle well closed, and the contents shaken for a few minutes. Maceration is continued for five days, the bottle being well shaken several times a day ; the tincture is then strained, the marc pressed thoroughly, and the united liquors filtered. Experiments have proved that four days' maceration suffices to extract from drugs as much as can be extracted in eight days, so it is not profitable to continue maceration longer than five days. The English practice of washing the marc with an additional portion of menstruum, so as to make the volume of tincture the same as the original volume of menstruum taken, is peculiar, and prejudicial to uniformity. It is obvious that in making, say, a 1-in-10 tincture, if the macerate is well shaken several times daily, the liquid remaining in the marc after pressure cannot be much, if at all, stronger than that strained off; and the latter is truly 1 in 10. A fresh portion of menstruum simply dilutes the tincture. Any of the formulas here directed to be made by method A should not, therefore, be so diluted.

B. *Maceration and Percolation.*—The best process to adopt is the following:—Put the comminuted drug into a basin, and to every ounce of it add ½ oz. of the menstruum; mix thoroughly until the drug appears uniformly moistened; put the drug on a piece of thick paper, and pour into the percolator; shake it down lightly, cover, and in four hours press down the powder with a plunger—*e.g.*, a pestle. With few exceptions, such as orange-peel, most drugs have to be firmly pressed down. If the tincture is weaker than 1 in 5, no further maceration is required, and percolation may be proceeded with; but in the case of stronger tinctures, when the drug has been packed in the percolator, menstruum is poured upon it until tincture begins to drop through, and the menstruum just covers the surface of the drug. Then close the outlet of the percolator, place the cover on, and set aside for from twelve to twenty-four hours. At the end of this period allow percolation to proceed, adding more menstruum as required—*i.e.*, when the upper portion of the drug appears to have no liquid in it—and so continue until the whole of the menstruum has been used. In some cases, if the menstruum is rectified spirit, when the percolate ceases to drop, the residual tincture may be displaced with water, in which case 22½ oz. of spirit is required for every pint of tincture; but when the menstruum is proof spirit, it is best to press the marc, add the liquor to the percolate, then sufficient menstruum to make the required volume, and filter.

The simple tinctures in the table pp. 621–2 require no instructions further than those given.

Drug	Menstruum	Strength	Process	Dose
Absinthii . .	S.T.	1 in 10	A	ʒj. or more
Agarici alb. . .	S.T.	1 in 10	A	♏xx. to ʒj.
Alstoniæ constrict. (cort.) .	S.T.	1 in 10	A	ʒj.
Alstoniæ scholaris (cort.) . .	S.T.	1 in 10	A	ʒj.
Anacardii (sem.) .	S.V.R.	1 in 10	A	♏ij. to ♏x.
Anisi (sem.) . .	S.V.R.	1 in 5	B	♏x. to ʒss.
Anthemidis (single flowers) .	S.V.R.	1 in 8	A	♏x. or more
Anthemidis (fresh s. flowers) .	S.V.R. 2, Aq. 1	1 in 2	A	♏iij. or more
Anthoxanthi .	S.V.R. 6, Aq. 1	1 in 10	A	♏ij. to ♏v.
Apocyni (rad.) .	S.T.	1 in 10	A	♏v. or more
Arnicæ flor., U.S.P. . .	S.T.	1 in 5	B	—
Asclepias (cornuta and tuberosa) .	S.V.R.	1 in 10	A	♏x. or more
Benzoin. simp., B.P.C. . .	S.V.R.	1 in 10	A	—
Boldo . . .	S.T.	1 in 10	A	♏x. to ♏xl.
Bryoniæ, U.S.P.	S.V.R.	1 in 10	B	—
Burdock-root .	S.V.R. 1, Aq. 2	1 in 5	A	ʒj.
Cacti grand. (fresh) . .	S.V.R.	1 in 4	B	♏ij. to ♏x.
Calendulæ, B.P.C.	S.T.	1 in 5	B	♏v. to ♏xx.
Capsici æther. .	Ether	1 in 27	A	—
Capsici fort., B.P.C. . .	S.V.R.	1 in 3	B	♏j. to ♏iij.
Cardamom., U.S.P. . .	S.T.	1 in 10	B	—
Castorei . .	S.V.R.	1 in 20	A	ʒss. to ʒj.
Collinsoniæ . .	S.T.	1 in 10	A	ʒss. to ʒij.
Colocynth., P.G..	S.V.R.	1 in 10 (by weight)	A	♏v. to ♏xv.
Condurango .	S.T.	1 in 10	A	ʒss. to ʒij.
Convallariæ, B.P.C. . .	S.T.	1 in 8	B	♏v. to ♏xx.
Coto, B.P.C. .	S.V.R.	1 in 10	A	♏x. to ʒss.
Droseræ rot. .	S.T.	1 in 10	A	♏v. to ♏x.
Ergot. amm., B.P.C. . .	Spt. Am. Ar.	1 in 2	B	♏x. to ʒj.
Erythrophlœi .	S.V.R.	1 in 10	B	♏v. to ♏x.
Eucalypti fol., B.P.C. . .	S.V.R.	1 in 5	B	♏xv. to ʒij.
Eucalypti gummi	S.V.R.	1 in 4	A	♏xx. to ♏xl.
Euonymi (cort.), B.P.C. . .	S.V.R.	1 in 5	B	♏x. to ♏xl.
Euphorbiæ pilulif., B.P.C. .	S.T.	1 in 5	B	♏x. to ʒss.
Euphorbii (res.) .	S.V.R.	1 in 10	A	—
Gossypii rad. .	S.T.	1 in 4	B	ʒj.
Guaranæ . .	S.V.R.	1 in 4	B	ʒj.
Hellebori (nig.) .	S.T.	1 in 8	A	♏xx. to ʒj.
Hyoscyam. rad. .	S.T.	1 in 8	A	♏xx. to ʒj.
Ignatiæ amar. .	S.V.R.	1 in 10	A	♏v. to ♏xx.
Ipecacuanhæ .	S.T.	1 in 10	A	♏v. or more
Kolæ . . .	S.T.	1 in 5	B	ʒss. to ʒj.
Lacnanthis . .	S.T.	1 in 10	A	♏ij. to ♏x.
Lactucarii . .	S.T.	1 in 10	A	♏xx. to ʒj.
Lupulini . .	S.V.R.	1 in 8	A	♏x. to ʒj.
Lycopodii . .	S.V.R.	1 in 10	A	♏xv. to ʒj.
Maticæ, U.S.P. .	S.T.	1 in 10	B	ʒj. to ʒij.
Moschi, U.S.P. .	S.T.	1 in 20	A	ʒj. or more

Drug	Menstruum	Strength	Process	Dose
Persionis (cudbear)	S.V.R. 1, Aq. 2	1 in 8	B	—
Physalis alkek.	S.T.	1 in 4	A	ʒj. to ʒij.
Physostigmatis, U.S.P.	S.V.R.	1 in 25	B	♏x.
Phytolaccæ	S.T.	1 in 10	A	♏v. to ♏x.
Pulsatillæ, B.P.C.	60 p.c. Alc.	1 in 10	A	♏v. to ʒss.
Pyrethri flor.	S.T.	1 in 4	B	—
Quebracho	S.T.	1 in 5	B	ʒss. to ʒj.
Quillaiæ	S.V.R. 2, Aq. 3	1 in 5	B	♏xx. to ʒj.
Salicis nigræ	S.T.	1 in 5	B	ʒss. to ʒij.
Succini resin	S.V.R.	1 in 16	A	ʒss. or more
Thujæ occident.	S.V.R. 3, Aq. 2	1 in 10	A	♏j. to ♏v.
Verbasci Thap.	S.T.	1 in 8	A	♏xx. to ʒj.

S.T. = Proof Spirit, sp. gr. 0·920. S.V.R. = Rectified spirit, sp. gr. 0·838.
The drugs should be in No. 40 powder.

Tr. Aconiti (Fleming)

Aconite-root (in fine powder)	℥xvj. (troy)
Rectified spirit	℥xvj.

Macerate four days, then percolate with rectified spirit until 24 oz. of tincture is obtained.

Dose: 5 minims three times daily.

The formula and dose are the original of Dr. A. Fleming. The dose is excessive and dangerous—indeed, the tincture is rarely used internally except in veterinary practice. It should be particularly noted that the 'tr. aconiti Flemingi' of all prescriptions, except British and American, is not the above, but a 1-in-10 tincture. The N.F. formula is the same as the above.

Tr. Aconiti (Turnbull)

A tincture made from aconite-root ℥xv. and rectified spirit ℥xl. by method A.

This tincture is used chiefly for external application, and has been superseded by the liniment.

Tr. Aloes et Myrrhæ, P.L. & E.

Socotrine aloes (in powder)	℥iv.
Saffron	℥ij.
Tincture of myrrh	Oij.

Prepare by method A.

The synonym Tr. Myrrhæ Co. is erroneously given to this, that being the name of the old Dublin tincture which did not contain saffron. The preparation is now generally made with aloes 1 oz. and myrrh 2 oz. to the pint of proof spirit.

Tinctura Amara, N.F. and P.G.

(syn. *Stomachic Tincture or Drops*)

Gentian-root	ʒvj. gr. xxiv.
Centaury-herb	ʒvj. gr. xxiv.
Bitter-orange peel	ʒiv. gr. xvj.
Orange-berries	ʒij. gr. viij.
Zedoary-root	ʒij. gr. viij.
Rectified spirit and water, of each	a sufficiency

Reduce the drugs to No. 40 powder, and by method B make 16 oz. of tincture with a menstruum consisting of rectified spirit 2 volumes and water 1 volume.

Tinctura Antacrida, N.F.

(syn. *Dysmenorrhœa Mixture, Fenner's Guaiac Mixture*)

Perchloride of mercury	℈ij.
Guaiac resin (in powder)	℥ij. (troy)
Canada balsam	℥ij. (troy)
Oil of sassafras	℥ss.
Rectified spirit to	℥xvj.

Put the guaiac and balsam into a flask with 12 oz of spirit, cork loosely, and heat on a water-bath to boiling; then cool and filter. Dissolve the corrosive sublimate in ½ oz. of spirit, and add, with the oil of sassafras, to the filtrate, and wash the filter with spirit to 16 oz.

Dose: 10 to 20 minims.

Tinctura Antispasmodica

Tr. digitalis	ʒx.
Tr. opii	ʒv.
Ol. juniperi	ʒiss.
Spt. tenuior.	ʒviiiss.

M.

Dose: 10 to 20 drops.

Tr. Camphoræ Co., B.P.

(Extemporaneous)

Benzoic acid	℈ij.
Camphor	ʒss.
Oil of anise	ʒss.
Rectified spirit	℥xij.

Dissolve and add gradually to a mixture composed of

Tincture of opium	ʒix. ♏xlv.
Distilled water to	℥viij.

Filter if necessary. Product, 1 pint.

Tinctura Aromatica, N.F.

Cassia	ʒx. ℈iiss.
Ginger	ʒiv. ℈j.
Galangal-root	ʒij. gr. x.
Cloves	ʒij. gr. x.
Cardamoms	ʒij. gr. x.
Rectified spirit and water, of each enough to make	℥xvj.

Reduce the drugs to No. 40 powder, and make a tincture by method B with a mixture of spirit 2 volumes and water 1 volume.

Tinctura Carminativa, B.P.C.

Cardamom-seeds (bruised)	ʒx.
Stronger tincture of ginger	ʒx.
Oil of cinnamon	♏c.
Oil of caraway	♏c.
Oil of clove	♏c.
Rectified spirit to	℥xx.

Macerate the cardamoms in 15 oz. of the spirit for a week, decant, express, and dissolve the oils in the mixed tinctures, making up to 1 pint with rectified spirit.

Dose: ♏ij. to ♏x.

Tr. Ferri Muriatis, P.E.

(syn. *Tr. Ferri Sesquichloridi, P.L.*)

Ferri peroxidi hydrat., B.P.	℥vj.
Acid. hydrochloric., B.P.	℥xx.
Spt. rectificati	℥lx.

Digest the peroxide in the acid contained in a glass vessel for three days, agitating occasionally; then add the spirit, and filter.

Dose: ♏x. to ʒj.

This preparation was originally made with magnetic oxide of iron, and was, therefore, ferroso-ferric. More than sixty years ago the black oxide gave place to the red, and the tincture became purely ferric. Still the belief has not died out that the 'Edinburgh tincture,' as it is called, differs from and is superior to the B.P. one, and the ferroso-ferric idea persists. The Edinburgh and B.P. tinctures undoubtedly differ in odour, and some doctors of the Edinburgh school state that they get better results with their native article, especially in the treatment of erysipelas.

Tr. Ferri Pyrophos. (Kidd)

(syn. *Tr. Pyrophos. Co.*)

Ferri pyrophosphat.	ʒj.
Aq. destillat.	ʒviiss.

Solve et adde

Spt. rectificat.	ʒj.

M.

Glycerine Tinctures

Chiefly through the advocacy of Sir B. W. Richardson glycerine has been used instead of alcohol for making so-called tinctures, the object being to eliminate alcohol, and thus satisfy the objections of temperance reformers. Originally, the 'tinctures' were made by percolating the finely powdered drug with a menstruum consisting of 2½ volumes of strong acetic acid, 25 volumes of glycerine, and distilled water to 100 volumes. It is better to use, instead of the drug, an equivalent of the fluid extract, evaporating to get rid of the spirit. Generally one-half of the extract taken has to be dissipated. Evaporation should be done at a low heat. Dissolve the residue in the aceto-glycerine menstruum, set the mixture aside for a few days to deposit, and filter.

The following are the tinctures which are efficient when made by the glycerine method. For those marked with an asterisk the corresponding extracts or fluid extracts may be used; in other cases proceed as if they were B.P. :—

Tr. aloes
Tr. arnicæ
Tr. aurantiii
*Tr. belladonnæ
*Tr. buchu
Tr. calumbæ
Tr. camph. co.
Tr. capsici
Tr. cascaril.
Tr. catechu
*Tr. chiratæ
Tr. cinchonæ co.
*Tr. cinchonæ
Tr. cinnamom.
Tr. colchici sem.
Tr. conii
Tr. digitalis
Tr. ferri acet.
Tr. ferri perchlor. (no ac. acet.)
Tr. gentianæ co.
*Tr. hyoscyam.
Tr. kino
Tr. krameriæ
Tr. limonis
*Tr. lobeliæ
*Tr. nucis vomicæ
Tr. opii
Tr. quassiæ
Tr. rhei
Tr. scillæ
*Tr. serpentariæ
*Tr. stramonii
*Tr. valerian.
*Tr. valer. ammon. (no acid, but ammon. carb. ℥ss. and liq. ammon. fort. ℥j. to the pint).

Hebra's Tincture

Equal parts by weight of wood-tar, soft soap, and rectified spirit. Mix the tar and soap together in a mortar, and stir in the spirit. Strain if necessary through tow.

Tincture of Indian Bark

Tr. cardam. co.	℥j.
Tr. capsici	ʒij.
Tr. rhei	℥j.
Tr. myrrhæ	♏xlv.
Spt. æther. nit., ·850	℥v.
Syrup. aur.	lb. ij.
Sacch. ust.	q.s.
Aq.	℥v.

Mix the first five ingredients. Thin the golden syrup with the water, add the tincture mixture, and colour.

Dose: ℥ss. to ℥j. for slight bowel-complaint.

See also 'Indian Brandy.'

Tincture of Indigo

Indigo (in coarse powder)	℥j.
Strong sulphuric acid .	℥iiss.

Macerate for four days, frequently agitating, then add

Water	℥xij.
Slaked lime . . .	℥iij.

The lime should be added gradually and with constant agitation. When cold add

Rectified spirit . .	℥v.

and wash the filter with another 2½ oz. of rectified spirit.

Tr. Iodinei, P.E.

Iodine	℥iiss.
Rectified spirit . .	℥xl.

Dissolve the iodine in the spirit with the aid of heat and gentle agitation.

Tr. Iodi Ætherialis

Same strength as above, ether being the solvent.

Tincture of Iodine Bromide

Iodine	℥j.
Bromine	℥ss.
Rectified spirit . .	℥xvij.
Ether	℥vij.
Glycerine . . .	℥ij.

Dissolve the iodine in the spirit and the bromine in the ether; add the glycerine to the bromine solution, and mix the two solutions. May be decolorised with sodium bisulphite (℥ij.).

Tr. Iodi Decolorata

I. B.P.C.

Iodine . . .	ʒiv. gr. x.
Rectified spirit . .	℥vss.

Dissolve by the aid of a gentle heat. When cold transfer to a stoppered bottle and add

Stronger solution of ammonia . . .	ʒx.

Keep the mixture in a warm place until decolorised, after which dilute it with

Rectified spirit to .	℥xx.

Mix.

Tr. Iodi Decol. Fort. is the decolorised solution without the additional portion of spirit.

II. N.F.

Iodine . . .	ʒx. gr. x.
Hyposulphite of sodium	ʒx. gr. x.
Water . . .	℥iss.
Stronger solution of ammonia . . .	℥j.
Rectified spirit to .	℥xvj.

Digest the iodine, hyposulphite, and water at a gentle heat until a solution is formed; then add rectified spirit 2 oz. and the ammonia solution. Shake until colourless, cool, and add spirit to 16 oz. Place the bottle in a refrigerator for a few hours, and filter.

Tr. Iodi Oleacea

Iodi	ʒj.
Ol. ricini . . .	ʒvj.
Spt. rectificat. (60 o.p.) ad	℥iij.

Dissolve.

Tr. Ipecac. et Opii, U.S.P.

(syn. *Tincture of Dover's Powder*)

Deodorised tincture of opium . . .	℥x.
Fluid extract of ipecac .	℥j.
Proof spirit to . . .	℥x.

Evaporate the tincture on a water-bath to a weight of 8 oz., when cold add the fluid extract, and filter; wash the filter with proof spirit to make the filtrate measure 10 oz.

Tr. Ipecac. Co. c̄ Scillâ

Chloroformi . . .	ʒj.
Spt. camphoræ . .	℥j.
Liq. morphin. hydroch. .	℥iss.
Tr. zingiberis . . .	℥ss.
Tr. ipecac. (1 in 10) .	℥ij.
Tr. scillæ . . .	℥iij.
Glycerini ad . . .	℥x.

M.

Dose for adults: A teaspoonful when cough is troublesome.

Tr. Lobeliæ Acid. (Beach)

Lobelia herb . . .	ʒij.
Capsicums . . .	ʒij.
Vinegar	℥xvj.

Boil the vinegar and pour it upon the drugs in an earthenware jar. Macerate ten days and filter.

Dose: Half a teaspoonful as an antispasmodic.

Tr. Lobeliæ Comp.

(Dr. J. King's Expectorant Tincture)

Lobelia herb, bloodroot, skunk-cabbage root, wild-ginger root, and pleurisy root, of each 1 oz.; water, 16 oz.; rectified spirit, 48 oz. Reduce the drugs to No. 40 powder and make a tincture by method B.

Dose: ♏x. to ʒss. as an expectorant.

Tr. Nervina (Bestucheff)

Liq. ferri perchlor. fort. .	ʒvj.
Æther.	℥iv.
Spt. rectificat. ad . .	℥xvj.

Mix the solution of iron with 10 oz. of the spirit contained in a white-glass bottle, add the ether and the rest of the spirit. Cork the bottle well, and expose to the sunlight until decolorised. Then place in a shady spot and remove the cork occasionally until the tincture becomes yellow.

Tr. Myrrhæ et Boracis

We repeat the following formula as the one most suitable for prescriptions:—

Myrrh. elect. cont. . .	℥j.
Tr. krameriæ . . .	ʒx.
Sodæ biborat. . .	ʒiss.
Glycerini . . .	℥ss.
Aq. coloniensis . .	℥x.

Macerate fourteen days and filter.

Tr. Opii Aquosa

Opium	℥xij.
Rectified spirit . .	℥xxxij.
Water to . . .	Cong. j.

Dissolve salicylic acid ℈iv. in the water. Boil the opium in 3 pints of the water for twenty minutes until it is thoroughly disintegrated, set aside until cold, decant the clear liquor, and to it add the spirit. Again boil the opium marc with 2 pints of water, and a third time with the rest of the water; add the liquors when cold to the reserved portion, and slightly acidify with glacial acetic acid. Press the marc, and add the pressings, along with 2 dr. of caramel, and water to make the whole measure 1 gal. Place in a cold cellar for fourteen days and filter.

Tr. Persionis Co., N.F.

Cudbear	ʒij.
Caramel	℥iss.
Rectified spirit 1 vol. Distilled water 2 vol.	} a sufficiency

Make 12 oz. of tincture of cudbear with the spirituous menstruum by method A. Filter, and add the caramel, dissolved in 2 oz. of water, to the filtrate. Wash the filter with the menstruum to 16 oz.

Tr. Phosphori Co., B.P.C.

Phosphorus	gr. xij.
Chloroform	℥iiss.

Place in a stoppered bottle, and apply the heat of a water-bath until dissolved. Then add the solution to

Absolute alcohol	℥xiiss.

Shake well.

The tincture should be preserved from the light in accurately stoppered bottles.

Dose: 3 to 12 minims.

Tr. Podophyllini (Dobell)

Resin. podophylli	gr. j.
Tr. zingib. fort.	ʒj.
Spt. rectificat. ad	℥j.

Solve.

Dose: ʒj. in water at bedtime.

Tr. Podophyllini Ammoniat.

Resin. podophylli	gr. viij.
Spt. ammon. arom.	℥j.

Macerate three days, and filter.

Dose: ♏j. for children and more for adults.

The tincture made with solution of ammonia gradually loses its activity.

Tr. Physostigmatis, B.P.C.

Made by percolating 4 oz. of the seeds, in No. 40 powder, with sufficient 90 p.c. alcohol to make 20 oz. of tincture.

Dose: 5 to 15 minims.

Tr. Valerianæ, B.P.C.

The 1885 B.P. tincture: 2½ oz. of Valerian to 20 oz. of 60 p.c. alcohol.

Tr. Veratri Viridis, B.P.C.

The 1885 B.P. tincture: 4 oz. of the rhizome to 20 oz. of 90 p.c. alcohol.

Tr. Picis

Ol. picis	℥j.
Spt. rectificat.	℥vij.

Mix thoroughly by shaking, and after a day filter.

Tr. Rhei Aquosa, N.F.

Fluid extract of rhubarb	℥iss.
Borax	gr. lxxij.
Carbonate of potassium	gr. lxxij.
Cinnamon-water	℥ij.
Rectified spirit	ʒxiv.
Distilled water to	℥xvj.

Dissolve the borax and carbonate in about 8 oz. of distilled water, add the cinnamon-water, spirit, and fluid extract of rhubarb, and water to 16 oz. Filter if necessary.

Tr. Rhei Vinosa, N.F. and P.G.

Fluid extract of rhubarb	ʒx.
Fluid extract of bitter-orange peel	ʒiiss.
Tincture of cardamoms	ʒx.
Sugar	℥ij.
Sherry wine to	℥xvj.

Mix the first three ingredients with 12 oz. of sherry, and dissolve the sugar in the mixture by shaking. Add sherry to 16 oz., and filter.

Tr. Rusci (Hebra)

Ol. rusci	℥j.
Ol. lavandulæ	♏xx.
Ol. rosmarini	♏xx.
Ol. rutæ	♏xx.
Ætheris	℥ij.
Spt. rectificat.	℥ij.

M.

Ruspini's Tincture

Ambergris	℈j.
Cloves	℥j.
Orris-root	℥viij.
Rectified spirit	Oij.

Reduce the solids to No. 40

powder, and make 2 pints of tincture by method B.

Tr. Strychninæ Nit. (Kidd)

Strychninæ puræ . .	gr. v.
Acid. nitric. fort. . .	♏xl.
Aq. destillat. . .	℥iss. ♏50
Spt. rectificat. .	ʒiij. ♏x.

Mix the acid with the water, and dissolve the powdered strychnine in it by shaking and the heat of the hand; then add the spirit.

Tr. Strychninæ Phos. (Kidd)

Strychninæ puræ . .	gr. v.
Acid. phosphoric. dil. .	ʒj. ♏xx.
Spt. rectificat. . .	℥j. ♏xx.

Dissolve the strychnine in the acid, and add the spirit.

Dose: 2 to 3 drops in water.

Tr. Tolutana Solubilis, N.F.

Balsam of tolu . .	ʒxij.
Carbonate of magnesia .	ʒj.
Glycerine . . .	℥vj.
Water and rectified spirit, of each enough to make	℥xvj.

Mix 3 oz. of spirit with the glycerine, and dissolve the balsam in the mixture with the aid of heat, avoiding loss by evaporation. Add 6 oz. of water, and allow the mixture to become old. Pour off the milky liquid from the resinous precipitate (which is to be rejected), mix it with the carbonate of magnesia by trituration, and filter. Lastly, pass enough of a mixture of 1 volume of spirit and 2 volumes of water through the filter to make the whole filtrate measure 16 oz.

One ounce of this with 15 oz. of syrup makes a syrup of tolu.

Warburg's Fever-tincture
(syn. *Tr. Antiperiodica, B.P.C.*)

Aloes socotrinæ . .	lb. j.
Rad. rhei . .	℥iv.
Sem. angelicæ . .	℥iv.
Confect. damocratis .	℥iv.
Rad. inulæ . . .	℥ij.
Croci sativi . . .	℥ij.
Sem. fœniculi . .	℥ij.
Cretæ præparatæ . .	℥ij.
Rad. gentianæ . .	℥j.
Rad. zedoariæ . .	℥j.
Piper. cubebæ . .	℥j.
Myrrhæ electæ . .	℥j.
Camphoræ . . .	℥j.
Boleti laricis . . .	℥j.
Spirit. tenuioris . .	Oxxv.

Digest for twelve hours in water-bath, strain, and add quininæ sulphatis ℥x., continuing the heat until the quinine sulphate dissolves. Cool and filter.

Dose: ʒj. to ℥ss.

The above is the formula given by Dr. Carl Warburg to Professor W. C. Maclean, of the Indian Army, in 1875. The B.P.C. omits conf. damocratis, replacing it with opium, black pepper, cinnamon, and ginger.

Tr. Zingiberis

Tr. zingib. fort. B.P. '85	ʒij.
Spt. rectificat. ad . .	℥j.

M.

Also made by dissolving gingerin ℈viij. in a pint of spirit.

Traumaticin (Auspitz)

Guttapercha tissue . .	ʒj.
Chloroform (by weight) .	ʒx.

Dissolve.

Ten drachms of chloroform measures barely ʒviss. The Codex orders ʒix. by weight and the D.A.V. book ʒviij. Liquor guttapercha, B.P., was about the same strength. Auspitz's medicated traumaticin contains chrysarobin ʒj. with the quantity in the formula.

UNGUENTA—OINTMENTS

Ung. Æther. Ozonic., Ex. Phar.

Ozonic ether . . .	℥ss.
Lard	℥iv.
Benzoic acid . . .	℈j.
Otto of rose . . .	gtt. iv.

Mix.

Ung. Æruginis

Cupri subacetat. . .	ʒj.
Adipis	℥j.

M.

Ung. Acid. Pyrogallic. (Jarisch)

Acid. pyrogallic. . .	ʒj.
Adipis	℥j.

M.

Ung. Acid. Pyrogallic. Co. (Unna)

Acid. pyrogallic. . .	gr. lxxv.
Acid. salicylici . .	ʒss.
Ammonii ichthyolatis .	gr. lxxv.
Vaselini ad . . .	℥iij.

M.

Ung. Acid. Salicyl. c̄ Creosoto (Unna)

Acid. salicylic. . .	ʒj.
Creosoti . . .	ʒij.
Ung. simplicis . .	℈ij.
Ceræ flavæ . . .	ʒj.

Melt the wax and ointment, and incorporate the creosote and acid with the mixture.

Ung. Althææ (Factitious)

Yellow resin . . .	℥viij.
Yellow wax . . .	℥viij.

Melt and add

Linseed oil . . .	℥vj.
Rape oil . . .	℥xvj.

Stir and add

Palm oil . . .	℥viij.
Soft paraffin . . .	℥iv.

Strain if necessary.

Anti-neuralgic Ointment

Chloral hydrate . .	℥j.
Menthol	℥j.
Cocoa butter . . .	℥iv.
Spermaceti . . .	℥ij.

Melt the cocoa butter and spermaceti, and dissolve the chloral hydrate and menthol in the mixture.

Directions.—A little of the ointment to be rubbed on the affected parts.

Ung. Antiphelidicum (Hebra)

(syn. *Freckle Ointment*)

Hydrarg. ammon. chlor. .	ʒj.
Bismuth. subnit. . .	ʒj.
Ung. glycerini . .	℥ss.

M.

Directions.—To be applied to the parts affected three or four times a day.

Ung. Benzoini

Powdered benzoin . .	ʒj.
Lard	℥iv.

Mix.

Ung. Bals. Peruvian.

One drachm of the balsam to 1 oz. of lard or any other basis desired.

Unguentum Cadini

(syn. *Wilkinson's Ointment*, *Ung. Sulphur. Co.*, *N.F.*)

Cretæ præparatæ . .	ʒiiss.
Sulphur. sublim. . .	℥ss.
Ol. cadini . . .	℥ss.
Saponis mollis . .	℥j.
Adipis	℥j.

Mix the lard with the soap and oil, then rub the mixed powders with the mixture, gradually added.

Ung. Camphoræ

Flor. camphoræ	℥vj.
Adipis	℥xxxij.

Melt the lard, and dissolve the camphor in it.

Ung. Capsici

See page 455.

Ung. Carbolici Co. (Startin)

Zinci oxidi	ʒj.
Pulv. calaminæ	℈j.
Acid. carbolici	gr. x.
Ung. hydrarg. nit.	ʒj.
Adipis benzoat. ad	℥j.

M.

Ung. Chrysarobini Co. (Unna)

Chrysarobini	gr. lxxv.
Acid. salicylic.	ʒss.
Ammonii ichthyolat.	gr. lxxv.
Vaselini ad	℥ij.

M.

Ung. Creosoti Co. (Startin)

Plumbi carbonatis	℈j.
Hydrarg. ox. rub.	℈ss.
Ol. palmæ	℥ss.
Adipis benzoati	℥ss.
Creosoti	♏vj.

M.

Ung. Creolini pro Psoriase

(Dr. Phineas S. Abraham)

Creolini	ʒss.–ʒj.
Hydrarg. ammon.	gr. x.–gr. xx.
Saponis mollis	ʒiiss.
Vaselini ad	℥j.

Fiat unguentum.

Date's Ointment

I

Hydrarg. oxid. rub.	℥ivss.
Hydrarg. sulph. rub.	q.s.
Ceræ albæ	℥ivss.
Cetacei	℥ivss.
Adipis	lb. xij.
Ol. origani	♏xx.

Fiat unguentum.

II

Hydrarg. ammoniat.	ʒiss.
Boli armenian.	ʒi.
Ol. origani	♏vj.
Acid. carbolic.	♏viij.
Adipis benzoat.	℥viij.

M.S.A.

The first formula is supposed to be Dr. Date's own; the second is used in Kent. Zinc ointment, coloured with vermilion and perfumed with origanum, is also said to be given for it.

Ung. Diachylon. (Hebra)

Lead plaster	℥iv.
Olive oil	℥iv.

Melt and add

Oil of lavender	♏xxv.

Mix.

This is now generally made with vaseline instead of olive oil, as suggested by Kaposi. The lavender oil is frequently omitted, but it should not be. Lassar adds carbolic acid 2 p.c.

Ung. Glycerini

Glycerinum amyli, B.P., with the addition of 1 part of powdered tragacanth to every 5 parts of starch used. In making it, damp the tragacanth-powder with three times its bulk of spirit, and incorporate with the mixed ingredients of glycer. amyli, then heat, &c., as directed in the B.P.

Golden Ointment

Hydrarg. oxid. levig.	℥j.
Ceræ albæ	℥ij.
Adipis	℥vj.

M.

This ointment is stimulant and escharotic, and is applied to indolent ulcers.

Singleton's golden ointment was supposed at one time to be citrine ointment, while it has also been alleged to be a compound of orpiment and of yellow oxide of mercury. Mr. R. J. Downes examined the ointment (*C. & D.*, 1877, page 139) and found that the contents of the pot weigh exactly 56 gr., and, having dissolved off the fat with bisulphide of carbon, he obtained a red granular and crystalline powder weighing 6·7 gr., or 12 per cent. This he proved to be levigated red oxide of mercury. His observation has been confirmed by other chemists.

Hæmorrhoidal Ointments

I

Acid. tannic. . . .	℈j.
Bismuth. subnit. . .	ʒj.
Pulv. opii . . .	gr. x.
Paraffin. mollis . .	℥j.

M.

II

Pulv. gallæ . . .	ʒiiss.
Pulv. plumbi acet. . .	ʒiiss.
Ext. belladonnæ . .	gr. iv.
Ung. camphoræ . .	℥j.
Vaselini	℥j.

Fiat unguentum.

Ung. Hydrargyri Oleati, B.P.C.

Oleate of mercury . .	℥j.
Simple ointment . .	℥j.

Mix without heat.

Ung. Hydrargyri Oxidi Flavi

(Pagenstecher)

Hydrarg. oxid. flav.	ʒss. vel ʒj.
Ung. cetacei . . .	℥j.

Misce exactissime et fiat unguentum.

N.B.—See observations below.

The last formula is the original prescription of Professor H. Pagenstecher, published in 1865. It is rarely used in England, the formula preferred being one consisting of the yellow oxide gr. viij. to ʒss. to vaseline ℥j. It is curious to note that Mr. Balmanno Squire anticipated Pagenstecher in advocating the superiority of yellow oxide of mercury over the red oxide for making ointments. Mr. Squire communicated a paper on the subject to the Pharmaceutical Society in March, 1865. According to Dr. Alexander Pagenstecher, nephew of the professor (*C. & D.* liii. p. 53), his uncle began to use the yellow oxide in 1856, on the suggestion of Apotheker Hofmann, of Wiesbaden, who recommended the freshly precipitated oxide in place of red oxide previously used by Professor Pagenstecher.

Ung. Hydrargyri Co. (Startin)

Hydrarg. ammon. chlor.	℈ss.
Plumbi acetatis	℈ss.
Zinci oxidi	ʒj.
Ung. hydrarg. nit.	℈j.
Adipis	℥ss.
Ol. palmæ	℥ss.

M.

For chronic eczema. Not to be confounded with Mr. Startin's ointment for dandruff, which is given on another page.

Ung. Hydrarg. Mitius, B.P.C.

A mixture of B.P. ointment 1 oz. and lard 2 oz.

May be sold as Milder Mercurial Ointment or Blue Ointment for pediculi, not as mercurial ointment for medicinal use.

Ung. Hydrarg. Nit., B.P.

According to Mr. E. W. Lucas (*Phar. Jour.*, 4, iv., 121), Messrs. John Bell & Co.'s method of making this ointment is:

Dissolve the mercury in the nitric acid without the aid of heat, agitating gently from time to time. Melt the lard in the oil and raise to a temperature of about 380° F. Pour into an earthenware vessel, previously made hot, capable of holding ten times the quantity, and when the mixture has fallen to about 350° F. add by degrees the cold mercury solution, stirring briskly with a wooden spatula to promote disengagement of the fumes. Keep stirred until cold.

If these directions are closely followed a pale lemon-coloured ointment, which keeps well, is said to result, but this is not invariably the case.

Ung. Hydrarg. Sulphat. Flav.

Hydrarg. sulphat. flav.	ʒj.
Adipis benzoat.	℥iv.

M.

Ung. Ichthyol. (Unna)

Ammon. ichthyolat.	ʒj.
Aquæ destillatæ	ʒj.
Adipis benzoat.	ʒiij.
Lanolini anhydros.	ʒv.

M.

Salicylated ichthyol ointment contains salicylic acid ʒss. to ʒiss. in addition to the above. The ichthyol should be rubbed down with the water before adding the fats.

Itch-ointment

Hydrargyri perchloridi	gr. xvj.
Pulv. ammonii chloridi	gr. xvj.
Hydrargyri ammoniati	℈ij.
Plumbi acetatis	℈ij.
Sulphur. præcipitat.	℥ij.
Hydrarg. sulphurat.	q.s.
Adipis benzoati	℥xvj.

Triturate the powders together with sufficient vermilion (ʒj.) to impart a pink tint to the ointment, then work in the benzoated lard gradually to produce a smooth preparation. Perfume with oil of lavender and ess. bouquet.

Directions.—To be applied at bedtime, and after washing in the morning.

Two-ounce pots of this retail at 1*s.* It is a good application for many skin-disorders, such as eruptions on the forehead, and is a certain cure for itch.

Ung. Lanolini (Helbing)

Lanolin. anhydros.	℥viss.
Paraffini liquidi	℥iij.
Ceresini	℥ss.
Aquæ	℥iij.

Melt the ceresin in the paraffin by heat, and mix with the lanoline and water.

Ung. Leniens

(syn. *Ceratum Galeni*, *Ung. Refrigerans*, *Cold-cream*)

I

Ceræ albæ puræ	℥iss.
Cetacei	℥iss.
Ol. amygdalæ	℥x.

Melt, pour into a warm jar, and add otto rosæ ♏xx. ; also, gradually, constantly stirring

Aq. rosæ	℥x.

This is the cold-cream which should be used for prescriptions.

II. Unna's

Adipis benzoat.	℥viij.
Olei benzoat.	℥iv.
Lanolin.	℥iv.
Aq. rosæ	℥iv.
Aq. flor. aurantii	℥ij.

M.

Mayer's Ointment

(Eclectic Dispensatory)

Olive oil	2½ lbs.
Gum thus	½ lb.
Beeswax	4 oz.
Fresh butter	4 oz.
Red-lead	1 lb.
Honey	12 oz.
Powdered camphor	½ lb.

The mixture of olive oil, beeswax, gum thus, and butter should be heated in an iron vessel, four times the capacity of the ingredients, over direct fire until it effervesces, when red-lead is added cautiously, a tablespoonful at a time, and well stirred after each addition, the red colour changing to brown quickly if the temperature is high enough. After the reaction is completed, and the mixture is cool enough to receive the honey without violent effervescence, it should be added and stirred well to evaporate the water. Lastly, when the mixture is cool enough to dissolve the camphor without vaporisation it is added and dissolved.

In the United States 'this forms a superior salve, and is useful for all ulcers, cuts, wounds, &c. It has been kept a great secret for a length of time among the foreign population of the country, and is highly prized by those who have used it.'

Ung. Metallorum

Ung. plumbi acetat.	℥j.
Ung. hydrarg. nit.	℥j.
Ung. zinci oxidi	℥j.

M.

Ung. plumbi subacet. is sometimes used, but the above is the formula more generally adopted

Ung. Naphthalini Co.

For Eczema and Psoriasis

Naphthalin.	ʒij.
Acid. benzoic.	ʒj.
Acid. borici	ʒj.
Vaselini c̄ cerâ flav. (3–1)	℥ij.
Bals. peruvian.	ʒj.
Tr. benzoini	ʒij.

Fiat unguentum.

Ung. Naphthol. (Kaposi)

Naphthol.	ʒj.
Adipis	℥j.

M.

Nipple-ointments

I

Tannin.	ʒj.
Bismuthi subnit.	ʒij.
Vaselini	ʒxxx.

Mix intimately.

Directions.—The nipples to be well smeared with this, and kept so while the child is not nursing. The nipple to be carefully cleansed before the child is applied.

11. Black's Cerate

Black resin	℥ix.
Yellow wax	℥v.
Pitch	℥ss.
Linseed oil	℥viij.

Melt together. When somewhat cooled pour into a soaped pudding-tin, and when cold turn it out and cut with a sharp knife into suitable-sized pieces. Wrap each in paraffin-paper for sale.

Ung. Ophthalmicum

Hydrarg. oxid. flav.	℈iv.
Hydrarg. sulph. rub.	gr. xv.
Vaselini	℥vj.
Paraffin. dur.	℥j.

Fiat unguentum.

Ung. Opii

Ext. opii	ʒj.
Aq. destillat.	ʒss.
Glycerini	ʒss.

Rub together until smooth, then add

Ung. simplicis	℥j.

Mix.

Ung. Paraffini, P.G.

Hard paraffin	℥ij.
Liquid paraffin (sp. gr. ·880)	℥ix.

Melt the hard paraffin in the liquid by aid of heat, and stir as it cools.

Ung. Picis Co., N.F.

Oil of tar	4 parts
Tincture of benzoin	2 parts
Oxide of zinc	3 parts
Yellow wax	26 parts
Lard	32 parts
Cotton-seed oil	35 parts

Melt the yellow wax and lard with the cotton-seed oil at a gentle heat. Add the tincture of benzoin, and continue heating until all the alcohol has evaporated. Then withdraw the heat, add the oil of tar, and finally the oxide of zinc, incorporating the latter thoroughly, so that on cooling a smooth, homogeneous ointment may result.

Ung. Resinæ Acidum
(Manchester Infirmary)

	Summer	Winter
Yellow resin	℥iv.	℥iv.
Yellow wax	℥xx.	℥x.
Olive oil	℥xx.	℥xxx.
Venice turpentine	℥viij.	℥viij.
Burgundy pitch	℥iv.	℥iv.
Oxide of zinc	℥iv.	℥iv.
Solution of carbolic acid	℥xss.	℥xss.

Mix all the ingredients together except the last two. Rub the oxide and solution together, and add to the resinous mixture gradually, stirring well.

Sol. acid. carbol. is a mixture of carbolic acid ℥viij., glycerine ℥iv., and water ℥xvj.

Ung. Resorcin. Co. (Unna)

Resorcin.	gr. lxxv.
Ammon. ichthyolatis	gr. lxxv.
Acidi salicylici	ʒss.
Ung. simplicis ad	℥ij.

M.

Ringworm-ointment
(Malcolm Morris)

Acid. chrysophanic.	℈j.
Ol. deelinæ	ʒij.
Lanolini ad	℥j.

Fiat unguentum.

Ung. Rubrum Sulphuratum
(syn. *Lassar's Red Salve*)

Vermilion	ʒss.
Sublimed sulphur	ʒxiiss.
Petroleum jelly	ʒxxv.
Oil of bergamot	ʒss.

Mix.

Ung. Sambuci Viride

Fresh elder-leaves	lb. iv.
Mutton suet	lb. j.
Lard	lb. viij.

Boil until the leaves are crisp and all the water is dissipated, leaving the fats clear; then strain.

Ung. Staphisagriæ Olei

Pro Pediculos.

Ol. staphisagriæ	℥j.
Ol. rosæ geranii	♏x.
Paraffin. dur.	℥ss.
Paraffin. moll.	℥viss.

M.

Ung. Stramonii, U.S.P.

Ext. stramonii	ʒj.
Aquæ	ʒss.

Mix, and add

Adipis benzoat.	ʒviiiss.

Mix.

Ung. Sulphuris Comp.

Sulphur. vivi	℥viij.
Potass. nitrat.	ʒj.
Pulv. veratri albi	℥j.
Saponis mollis	℥viij.
Ol. bergamottæ	ʒss.
Adipis recentis	℥xxiv.

Mix the lard and soap, and incorporate the sulphur and hellebore with the mixture, then add the nitre dissolved in a little water, and, lastly, the bergamot.

This is the better for the addition of carbolic acid ʒij. to keep it.

Ung. Sulphuris c̄ Potassâ

(Helmerick's)

Sulphur. præcip.	ʒij.
Potass. carbonat.	ʒj.
Hydrarg. sulph. rub.	gr. ij.
Aq.	ʒj.
Ol. bergamottæ	♏ij.
Adipis ad	℥j.

Rub the first four ingredients, incorporate the lard, and perfume with the bergamot.

Ung. Sulphur. Hypochlorit. Co.

(Erasmus Wilson)

Sulphur. hypochlorit.	ʒij.
Potass. carbonat.	gr. x.
Adipis	℥j.
Ol. amygdal. essent.	♏x.

Fiat unguentum.

Ung. Wilsonii

Wilson's zinc salve is the name given on the Continent to benzoated zinc ointment, 1 in 5.

Trousseau's Wine.—The formula for this preparation is in the *Codex Français* 1884, its official title being 'Vin de Digitale composé de l'Hôtel-Dieu.' It is: Fol. digitalis pulv., 5 grammes; rad. scillæ, 15 grammes; bacc. juniperi, 75 grammes; potass. acetatis sicc., 50 grammes; vin blanc, 900 grammes; alcohol 90 per cent., 100 grammes. Bruise the squill and the juniper-berries, and macerate, together with the digitalis, in the mixed vin blanc and alcohol for six days, shaking from time to time. Strain and press the mass. Dissolve the acetate of potash in the wine and filter. The usual dose is a tablespoonful twice or three times a day. The formula differs somewhat from the original of Trousseau, which contained 6·60 grammes of squill and 13·20 grammes digitalis per litre.

Wine of Opium is made by macerating opium 1½ oz. in sherry 20 oz. for seven days and filtering.

ADDENDA

Owing to the publication of the British Pharmacopœia, 1898, the users of this volume should compare the following formulas with those in the B.P. and duly note the changes :—

Page 407. Official lozenges have been altered, and the black-currant basis recognised.

,, 455. *Chillie Paste.* 'A' formula is better than that of *Ung. Capsici* B.P., the proportion of spermaceti in the latter being too low.

,, 459. Compare the formula for *Transparent Chlorodyne* with that for *Tr. Chloroformi et Morphinæ Co.* B.P., which is twice as strong in morphine. The B.P. formula on page 458 is the 1885 one.

,, 472. *Cascara Sagrada Elixir* is practically *Syrupus Cascaræ Aromaticus* B.P.

,, 478. *Elixir Simplex* B.P.C. is represented by *Syrupus Aromaticus* B.P.

,, 488. *Liquor Hamamelidis* B.P. is *Witch Hazel Essence.*

,, 498. *Glycerinum Acidi Borici* is now a B.P. title, but is applied to a preparation like *Glycer. Boroglycerini* U.S.P., with 300 instead of 310 grammes of acid in 1,000 grammes.

,, 501. *Glycerinum Pepsini* is a B.P. title, the preparation being substantially the same as in the P.F.

,, 508. *Effervescent Caffeine Citrate* is now official, and contains 4 per cent. of caffeine citrate. *Lithii Cit. Eff.* B.P. contains 5 per cent. of lithium citrate.

,, 528. *Liquor Bismuthi* B.P. is now made by the P.F. method, with potassium citrate, &c., instead of citric acid.

,, 530. *Liquor Ergotæ Ammoniat.* A 1-in-4 preparation, *Tr. Ergotæ Ammon.*, is official. It is made by No. II. method.

,, 534. Do not confound *Liquor Iodi Causticus* with *Liquor Iodi Fortis* (*syn.* Lin. Iodi) B.P.

,, 536. *Liquor Pancreaticus.* The B.P. process for *Liquor Pancreatis* is that of Sir W. Roberts.

,, 538. *Liquor Picis Carbonis*, as here described, is now in the B.P.

,, 539. *Liquor Rhei Dulcis.* A liq. rhei conc. (not sweet) is now in the B.P.

,, 540. *Liquor Sennæ Fruct.* Note that there is a *Liq. Sennæ Conc.* in the B.P.

Page 564. *Oleates.* The B.P. methods of preparing mercury and zinc oleates are changed, Shoemaker's now being adopted. Zinci oleatum B.P. 1885 (P.F. page 566) is omitted and replaced by Ung. Zinci Oleati.

,, 584. *Pil. Phosphori.* The B.P. has adopted the carbon-bisulphide process, with lard, wax, and kaolin as excipients.

,, 587. *Glucose Syrup.* Note the difference between this formula and the new B.P. one under *Syrupus Glucosi.*

,, 591. *Pulv. pro Mist. Cretæ.* The change in *Mist. Cretæ* B.P. necessitates alteration in this formula. Use pulv. tragacanthæ ʒviij. in place of pulv. acaciæ 8 oz. and pulv. sacch. alb. ℥xvj., and use 45 grains of the powder instead of ℈ij. to water ℥j.

,, 595. *Sweet Spirit of Nitre* is an official synonym for *Spt. Ætheris Nitrosi* B.P.

,, 598. A *belladonna suppository* containing 1½ grain ext. belladonnæ alcoholic. (from the root) is official; also iodoform 3 grains in each.

,, 602. *Syr. Calcii Lactophosphatis* is a B.P. preparation, and, while resembling the P.F. one, is made by dissolving calcium carbonate in lactic acid, adding phosphoric acid, &c.

,, 604. *Syr. Cascaræ Aromat.* B.P. is unlike the B.P.C. syrup.

,, 604. *Syr. Codeinæ.* The B.P. preparation resembles No. II. formula, but is made with codeine phosphate 4 grains to 1 oz.

,, 607. *Syr. Ferri Phosph. c̄ Quin. et Strych.* B.P. resembles No. II., but is made with quinine sulphate ($\frac{1}{5}$ grain per drachm).

,, 619. *Nitroglycerin tablets* B.P. should weigh 5 grains each and contain $\frac{1}{100}$ grain of nitroglycerin.

,, 623. *Tr. Camphor. Co.* The extemporaneous formula, with 60-per-cent. alcohol, has been adopted by the B.P.

,, 628. *Tr. Zingib. Fort.* is omitted from the 1898 B.P. It is a 1-in-2 tincture made with rectified spirit, preferably by repercolation.

,, 628. *Liquor Guttapercha* has been removed from the B.P. and replaced by a benzol-carbon-bisulphide solution of indiarubber.

,, 631. *Ung. Hydrarg. Oleati.* Now official, but made differently.

,, 631. *Ung. Hydrarg. Oxidi Flavi.* This title is now official for a 1-in-50 ointment.

,, 633. *Cold-cream* is represented by *Ung. Aq. Rosæ* B.P., which is a modification of the P.F. formula

,, 634. *Ung. Paraffini* is a B.P. title.

WEIGHTS AND MEASURES

THE following equivalents between British and metric weights and measures are added for the convenience of those who use the latter system. Notes of differences between American and English terms are also added.

1 pound (sign lb.) = 453·59 grammes.

1 ounce (signs oz. and ℥) = $\frac{1}{16}$ lb. or 28·35 grammes.

1 drachm (signs dr. and ʒ) = 60 grains or 3·88 grammes.

1 scruple (sign ℈) = 20 grains or 1·3 gramme nearly.

1 grain (sign gr.) = 0·0648 gramme or about 6½ cgr.

The sign ℥ properly means the old apothecaries' ounce of 480 grains, but is only used in this book to signify the avoirdupois ounce of 437½ grains and the fluid ounce of 480 minims.

1 gallon (sign C or Cong.) = 4·545 litres.

1 pint (sign O) = $\frac{1}{8}$ gallon or 568·3 c.c.

1 fluid ounce (signs fl. oz. and ℥) = $\frac{1}{20}$ pint or 28·41 c.c.

1 fluid drachm (signs fl. dr. and ʒ) = $\frac{1}{8}$ fluid ounce or 3·55 c.c.

1 minim (sign ♏) = $\frac{1}{60}$ fluid drachm or 0·059 c.c.

The signs, therefore, are :—

Cong. = gallon, O = pint, lb. = pound, ℥ = ounce, oz. = ounce, ʒ = drachm, dr. = drachm, ℈ = scruple, ♏ = minim, gr. = grain.

Although the American minim (0·949 fluid grain) is slightly larger than the British (0·911 fluid grain) and the fluid ounce and drachm correspondingly larger, the differences may with few exceptions be ignored ; but the fact should not be forgotten that the American pint is only $\frac{4}{5}$ the capacity of the British pint, viz. 16 fluid ounces.

INDEX

NOTES FOR REFERENCE

All preparations and substances which are used medicinally are indexed under their Latin titles.

When a group of preparations (*e.g.* Aceta) falls into a particular section, and is there arranged alphabetically, the group, and not each member of it, is indexed.

All proper names are indexed (*e.g.* 'Christison's pills' and 'Australian salt'), but, as a rule, when common adjectives (*e.g.* 'Brown mixture') begin a title they are not separately indexed, and the articles will be found in their own groups—Mixtures, Pills, &c.

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